PACIFIC SALMON COMMISSION
SELECTIVE FISHERY EVALUATION COMMITTEE

REVIEW OF 2011 MASS MARKING AND MARK-SELECTIVE FISHERY PROPOSALS
REPORT SFEC (13)-1

January 2013

MEMBERSHIP OF THE SELECTIVE FISHERY EVALUATION COMMITTEE

Canadian Members	U.S. Members
Dr. Gayle Brown, SFAWG Co-Chair, CDFO	Dr. Gary S. Morishima, SFAWG Co-Chair, QIN
Ms. Roberta Cook, RCWG Co-Chair, CDFO	Dr. Marianna Alexandersdottir, SFAWG Co-Chair, NWIFC
Ms. Cheryl Lynch, RCWG, CDFO	Mr. Ron Olson, RCWG Co-Chair, NWIFC
Mr. Joel Sawada, SFAWG, CDFO	Dr. Shaun Clements, SFAWG, ODFW
	Ms. Carrie Cook-Tabor, RCWG, USFWS
	Dr. Annette Hoffmann, SFAWG, WDFW
	Mr. Kirt Hughes, SFAWG, WDFW
	Dr. Ken Johnson, RCWG, ODFW
	Mr. Ron Josephson, RCWG, ADFG
	Mr. Mark Kimbel, RCWG, WDFW
	Ms. Marianne McClure, RCWG, CRITFC
	Mr. George Nandor, RCWG, PSMFC
	Ms. Laurie Peterson, SFAWG, WDFW
	Dr. Kristen Ryding, SFAWG, WDFW
Other Steering Committee Members	**Other Steering Committee Members**
Mr. Chuck Parken, CTC Co-Chair, Data Sharing, CDFO	Mr. John Carlile, CTC Co-Chair, ADFG
Dr. Arlene Tompkins, CoTC Co-Chair, CDFO	Dr. Rishi Sharma, CTC Co-Chair, CRITFC

LIST OF ACRONYMS WITH DEFINITIONS

ADFG	Alaska Department of Fish and Game	**NSF**	Non-Selective Fishery
AK	Alaska	**OR**	Oregon
BC	British Columbia	**ODFW**	Oregon Department of Fish and Wildlife
BY	Brood Year	**PS**	Puget Sound
CA	California	**PSC**	Pacific Salmon Commission
CDFG	California Department of Fish and Game	**PSMFC**	Pacific States Marine Fisheries Commission
CDFO	Canadian Department of Fisheries and Oceans	**PST**	Pacific Salmon Treaty
CTC	Chinook Technical Committee	**RMIS**	Regional Mark Information System
CoTC	Coho Technical Committee	**SFEC**	Selective Fishery Evaluation Committee
CWT	Coded-Wire Tag	**SFAWG**	SFEC- Analytical Work Group
DIT	Double-Index Tag	**SFEC-RCWG**	SFEC- Regional Coordination Work Group
ER	Exploitation Rate	**SHRP**	Sport Head Recovery Program
ETD	Electronic Tag Detection	**SJDF**	Strait of Juan de Fuca
ID	Idaho	**URB**	Upriver Bright (Fall Chinook)
IDFG	Idaho Department of Fish and Game	**US**	United States
MM	Mass Marking	**WA**	Washington
MOU	Memorandum of Understanding	**WCVI**	West Coast Vancouver Island
MSF	Mark-Selective Fishery	**WDFW**	Washington Department of Fish and Wildlife

TABLE OF CONTENTS

Membership of the Selective Fishery Evaluation Committee iii
List of Acronyms with Definitions iv
List of Figures vi
List of Tables vi
Executive Summary vii
1 Introduction 1
2 Review of Mass Marking Proposals 2
2.1 Mass Marking Proposals Received 2
2.2 Mass Marking Levels 2
2.3 Double-Index-Tag Groups 3
2.4 Sampling Methods 6
2.4.1 Current Agency Sampling Methods 6
2.4.2 Estimated Sampling Encounters 10
3 Review of Mark-Selective Fishery Proposals Received 12
3.1 2011 Mark-Selective Fishery Proposals 12
3.1.1 Coho Salmon MSFs 12
3.1.2 Chinook Salmon MSFs 12
3.2 Expected Encounters of CWT Indicator Stocks in MSFs 30
4 Issues, Concerns, and Recommendations 37
4.1 MSF Proposals 37
4.2 MSF Reports 37
4.3 Chinook Salmon MSFs and DITs 38
4.4 Chinook Salmon MSFs and Sampling Methods 39
4.5 Mixed-Bag Regulations in MSFs 40
References 41
Appendices 43
Appendix A. Understanding of the Pacific Salmon Commission Concerning Mass Marking and Selective Fisheries (Revised February 2004). 43
Appendix B. Mass Marking Proposal Template 49
Appendix C. Template for Mark-Selective Fishery Proposals. 53
Appendix D. Spreadsheet Template for MSF Proposals. 55
Appendix E. Status of Mass Marking Proposals Received in 2010 for Mass Marking to Occur in 2011. 57
Appendix F. MSF Proposals Received in 2010 for Fisheries Occurring in 2011. 59
Appendix G. Current PSC Coho CWT Exploitation Rate Indicator Stocks and DIT Groups. 61
Appendix H. Current PSC Chinook CWT Exploitation Rate Indicator Stocks and DIT Groups. 63
Appendix I. Post-Season Report Templates 65

List of Figures

Figure 2.1 Number of Coho Salmon (panel A) and Chinook Salmon (panel B) mass marked and released by region and brood year, 1997-2010. 4

Figure 2.2. Projected Coho (panel A) and Chinook (panel B) salmon releases for brood year 2010 by region and mark status. 5

Figure 2.3. Numbers of sampled Chinook Salmon in Alaska's troll fishery by untagged and tagged, with catch numbers, 1995 – 2010. 11

Figure 3.1. Total landed catch in MSFs and NSFs in Puget Sound for catch years 2003-2007. 36

List of Tables

Table 2.1. Mass marking of Coho and Chinook Salmon proposed for 2010 and 2011 3

Table 2.2. Proposed fishery sampling methods for tagged Coho Salmon in 2011. 7

Table 2.3. Proposed fishery sampling methods for tagged Chinook Salmon in 2011. 8

Table 2.4. Projected numbers of mass-marked Coho and Chinook in CWT sampling programs 2011. 9

Table 3.1. Status of mark-selective fishery (MSF) proposals, fishery implementation, and post-fishery reporting for years 2003 through 2011. 14

Table 3.2. Summary information for Coho Salmon proposals received in 2010 for 2011-2012 MSFs or past MSFs not proposed this year. 17

Table 3.3. Summary information for Chinook proposals submitted in 2010 for 2011-2012 MSFs or past MSFs not proposed this year. 21

Table 3.5. Number of tagged and marked Coho Salmon sampled (Obs) and 2006-2008 average percent of total estimated tags (expanded for the sample rate) in fisheries or in escapement. 31

Table 3.6. Average number of tagged and marked Chinook Salmon sampled (Obs) and percent of total estimated CWTs (% of Est) in fisheries or in escapement averaged over years 2005-2009. 34

Table 4.1. Completed template for the third post-season report providing estimates of fish retained in MSFs by mark status and total mortalities by mark and size category. 38

Table 4.2. PSC Chinook indicator stocks expected to be encountered in MSFs in WA Ocean Areas 1 and 2 and in the Columbia River. 39

Table 4.3. Mixed bag regulations proposed for Chinook MSFs. Details on regulations are found in Table 3.3. 40

Executive Summary

Throughout this report a mass-marked fish refers to a fish from which the adipose fin has been removed. A proportion of the mass-marked fish will also contain an implanted coded-wire tag (CWT). A double-index-tag (DIT) group includes two related CWT groups, one with the adipose fin excised ("marked") and one with the adipose fin intact ("unmarked"). A variety of terms are in use to refer to marked and unmarked fish. In this report, the terms 'marked' and 'unmarked' are used for the most part with occasional use of the terms "clipped" and 'unclipped'.

Summary of 2011 Mass Marking Proposals

Marking Programs

Seventeen proposals (eight for Coho and 10 for Chinook) were received for mass marking (MM) occurring in 2011 (Appendix E). The Selective Fishery Evaluation Committee (SFEC) believes these proposals cover all but one MM program of relevance to the Pacific Salmon Commission (PSC).

Approximately 37 million Coho are proposed to be mass marked coastwide in 2011 (Table 2.1; Figure 2.1A), a level comparable to that proposed in 2010. Essentially all hatchery Coho production intended for harvest, from southern British Columbia (BC) and southern United States (US) hatcheries is now mass marked. Currently there are 19 Coho Salmon DIT groups (Table 2.1), of which the majority is released from Puget Sound (PS) or Washington (WA) coastal facilities. Two of the 19 are released from BC and four from the Columbia River Basin.

Approximately 106 million Chinook are proposed to be mass marked in 2011 from southern US Chinook hatcheries (Table 2.1; Figure 2.1B). This is approximately 4 million less than were proposed for 2010. Most all hatchery Chinook production from southern US hatcheries intended for harvest is now mass marked. Currently there are 15 Chinook Salmon DIT groups (Table 2.1), of which eight are released from PS facilities, two from the coastal facilities, and one spring and four fall stock releases from Columbia River facilities.

Sampling and DIT Programs

Assuming recent exploitation rates and sampling programs, the SFEC estimates the proposed MM of Coho stocks in 2011 will result in annual encounters of untagged marked Coho in sampling programs of approximately 1,400 Coho in Alaska (AK) and 8,000 Coho in Canada (Table 2.4). For southern US Chinook stocks, annual encounters of untagged marked Chinook in sampling programs are projected to be approximately 6,500 Chinook in AK, 22,600 Chinook in Canada, and 1,700 Chinook in California (Table 2.4).

Prior to MM, the adipose fin clip was employed as a visual indicator for fish containing a CWT. Consequently, sampling programs which were designed to collect heads from fish with missing adipose fins resulted in samples of heads, all which contained CWTs. With MM, a large number of marked fish do not contain CWTs; further, CWTs must be recovered from both marked and

unmarked fish to obtain data for DIT releases to estimate fishery impacts. Electronic tag detection (ETD) equipment has been developed as a means to efficiently identify marked and unmarked fish containing CWTs. However, ETD is not employed coastwide because of continuing reservations by some agencies regarding the cost, accuracy, and practical feasibility of incorporating this technology into their sampling programs. The Alaska Department of Fish and Game (ADFG), Canadian Department of Fisheries and Oceans (CDFO), Oregon Department of Fish and Wildlife (ODFW), and California Department of Fish and Game (CDFG) all conduct sampling programs which will not recover the unclipped component of DIT programs required to assess impacts of MSFs.

Considering sampling programs coastwide, some agencies already implement comprehensive electronic sampling strategies to recover CWTs from sport and commercial fisheries, while other agencies are still working to increase use of ETD. Washington State continues to fully implement electronic sampling statewide and consistently reports CWT recoveries of unmarked DIT releases in recreational marine and some freshwater MSFs, as well as in non-selective fisheries (NSFs). Starting in 2008, Canada also committed to full electronic sampling in all commercial fisheries for Chinook and reporting of all DIT CWTs. Coho in all Canadian commercial fisheries have also been electronically sampled with the exception of the Coho landed by the northern BC 'ice boat' fleet. Visual sampling only is used to recover CWTs in that fishery. Canada continues to rely on the Sport Head Recovery Program (SHRP) to recover CWTs from NSFs and MSFs alike and thus, no unmarked DIT recoveries are available from them. ODFW continues to use visual sampling of fall Chinook in the Columbia River and the Oregon (OR) coast fisheries, also resulting in no recoveries of unmarked DIT groups. Fisheries from which unmarked DIT recoveries should have been observed create gaps in analyses of fishery impacts on unmarked (wild) fish.

Encounters of large numbers of mass-marked Chinook are increasingly impacting catch sampling programs in northern fisheries, for example, approximately 30% of the Chinook caught in the south east Alaskan troll fishery with a missing adipose fin do not contain a CWT in recent years. With the MM of Columbia River fall Chinook stocks, the number of mass-marked Chinook encountered in California sampling programs is also estimated to significantly increase in 2011. The increased costs to deal with the additional marked fish (e.g., storage, and shipping to and sorting of heads in the dissection laboratories) are not quantified, but will impact the programs.

Summary of 2011 Mark- Selective Fishery Proposals

Forty-two proposals for MSFs (16 for Coho and 26 for Chinook) were received for fisheries in 2011 (Appendix F). The SFEC believes these proposals cover all MSFs planned for 2011 of relevance to the PSC. The proposals submitted to the SFEC for review are provided in Table 3.1. Further details describing the proposed MSFs and comments by the SFEC are provided in Table 3.2 and Table 3.3.

The majority of MSF proposals are for terminal marine or freshwater areas, each of which will impact mature fish of one to several stocks. Multiple MSFs for both Coho and Chinook are also expected to occur in ocean areas in 2011 in BC, WA (WA ocean areas 1 through 4 and the Columbia

Revert and OR. These fisheries will impact many stocks and also multiple broods of Chinook. Table 2.4 provides estimates of projected encounters of mass-marked fish in 2011 regional fishery sampling programs based on the number of mass-marked fish released by each participating agency. Table 3.4 and Table 3.5 each provide historical information on encounters of marked and tagged fish for the run years 2006-8 and 2003-8 to identify Coho and Chinook tagged stocks that can be expected in these areas with MSFs.

Issues and Concerns

Proposals

All requested MM and MSF proposals were submitted prior to the annual meeting of the SFEC in November but most of these were not submitted by the deadline of November 1. Receiving the proposals by November 1 would give the SFEC membership time to review them prior to the meeting, allowing for more time for during the meeting to prepare timely commentary back to MSF proponents. In general all information requested was supplied for both the MM and MSF proposals.

Post-season Reports

Post-season reports on MSF are required for each MSF prosecuted. One of the basic functions of these reports is to provide a record of how fisheries were actually prosecuted (whether they took place) and whether there were any changes in the way the fisheries and sampling programs were conducted relative to the proposal. These reports are to be submitted in the form of three tables (Appendix 1). The first two tables should be submitted by the annual PSC post-season meeting following the year of the fishery. Table 1.1 of the three tables was included for Puget Sound MSF's for 2003 to 2009 in the "*Preliminary 2010 Post Season Report on United States Salmon Fisheries of Relevance to the Pacific Salmon Treaty*" December 2010. No MSF post-season report tables were found in the Canadian post-season report (Jan 6, 2011). No post-season reports for Table 1.1 (sampling methods) or Table 1.2 (MSF's actually implemented) were provided in either Party's post-season report.

New Chinook MSF proposals

SFEC received proposals for four existing fisheries, two for Coho and two for Chinook MSF's. These are for fisheries that have been prosecuted since 2003 (two of them), 2008, and 2009. No new MSF's that had not occurred previously were proposed for 2011.

Mixed-Bag Regulations

Regulations to implement MSF's are increasingly complex, making analyses difficult. Different types of mixed bag regulations are part of the MSF's proposed by BC, WA, and OR for recreational fisheries. In most cases this is a mixed bag, where only adults that are marked may be kept but both marked and unmarked juveniles may be retained, but as MSF's expand a variety of types of mixed bag regulations are being proposed (Table 4.1). The SFEC is not aware of adequate methods for estimating impacts on marked and unmarked fish under mixed bag regulations and the agencies proposing these mixed bag regulations should assist in developing the analytical tools to measure the impacts of these fisheries.

Recommendations and Issues Requiring PSC Direction

Proposal Review Process

It is recommended that the PSC request agencies to submit proposals for all upcoming [illegible] MSFs and MSF's, and for agencies to provide both preliminary and final post-season reports on the conduct of MSF's within the timeframe adopted by the PSC. Agencies need to prioritize these tasks so that proposals and MSF post-season reports are completed and submitted in a timely manner.

Interagency Coordination and Cooperation

Mass marking, GRT, and CWT sampling programs are not sufficiently coordinated to support analysis by PSC technical committees. It is also not clear that agencies are collecting adequate and necessary data to permit correctly stratified, direct estimation of unmarked CWT recoveries in fisheries and escapements so that cohort reconstructions can be carried out on unmarked GRT releases. With the expansion of Chinook marine MSF's, the geographical range of electronic CWT sampling needs to be expanded and the number of GRT stocks needs to be increased. Specifically, ETD needs to be implemented by ODFW, beginning in [illegible], for Oregon Coastal Chinook and Columbia River fall Chinook to recover GRTs for Chinook exploitation rate indicator stocks. The SFEC recommends that GRT groups should be added for the following stocks:

Chinook GRT recommendations:

- Columbia River summer (Sandy/Lewis Fork) or Wells)
- Snake River fall subyearlings
- Willamette River spring (consists GRT program with electronic terminal sampling)
- North Oregon Coast (Salmon River)
- Mid Oregon Coast

Coho GRT recommendations:

- USFWS Eagle Creek – increase GRT release group size from [illegible] to the standard 50,000

The PSC should continue to support technical and policy processes to develop agreements to clarify responsibilities for maintaining a functional CWT system. these processes should build upon recommendations presented by the CWT Work Group in 2008.

[illegible]

3 [illegible]

3.1 [illegible]

[illegible]

3.2 [illegible]

[illegible]

4.4 Straddle station flag changes

[illegible] [illegible] [illegible] [

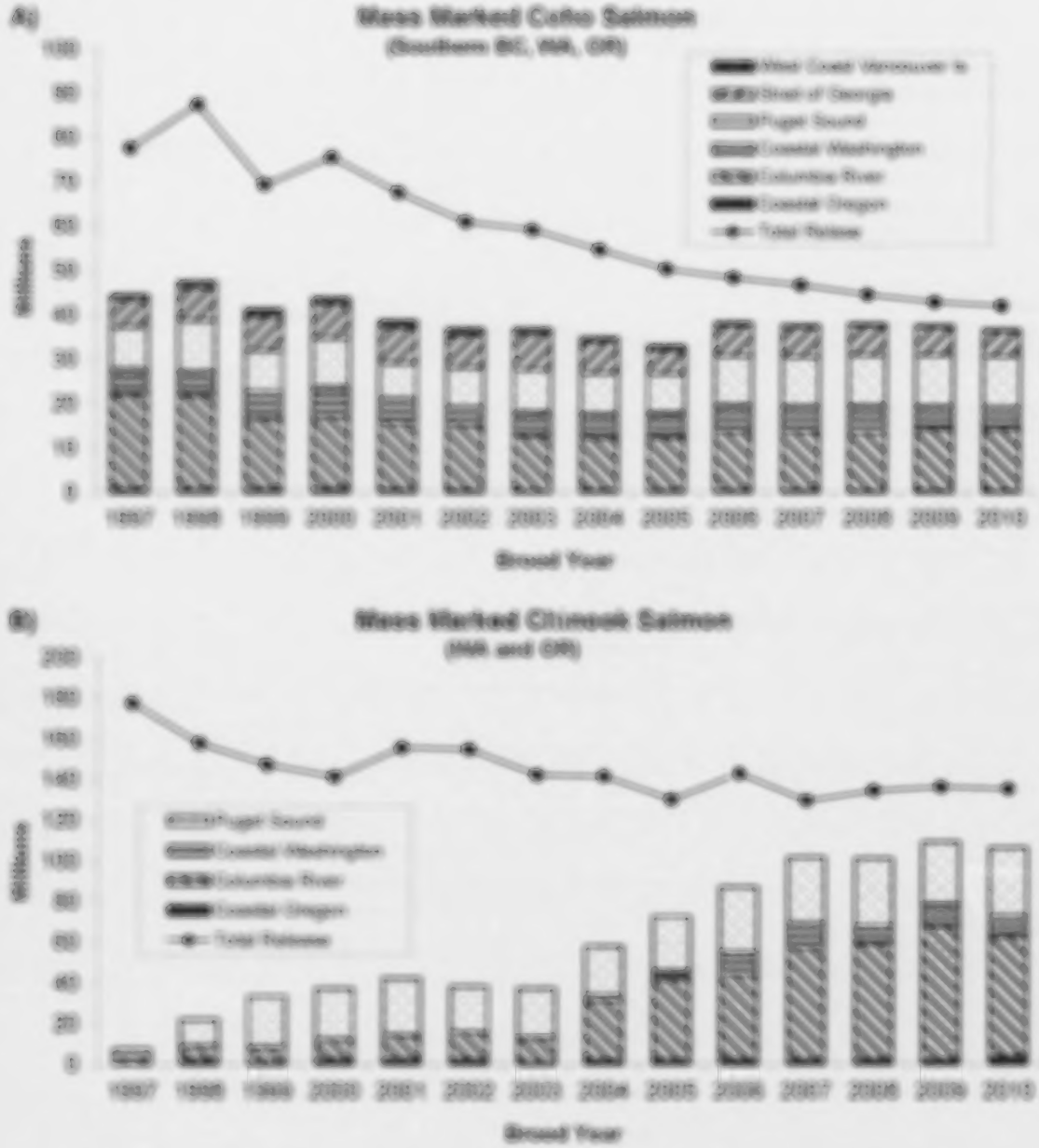
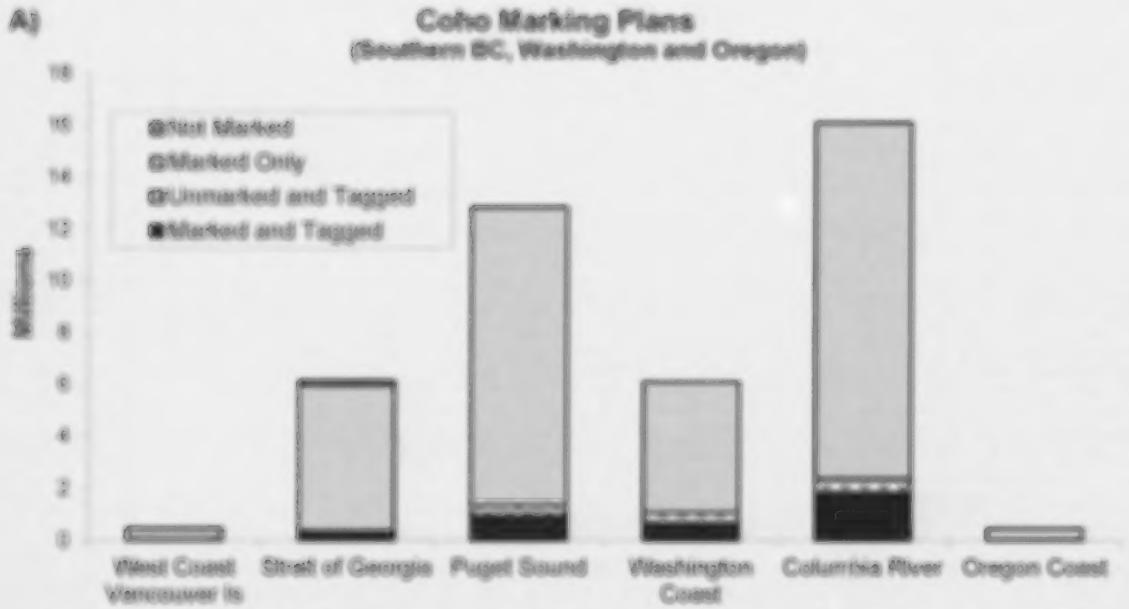


Figure 2.1 Number of Coho Salmon (panel A) and Chinook Salmon (panel B) mass marked and released by region and brood year, 1997-2010. The solid line represents total hatchery releases by brood year. Values used for brood years 2010 are proposed numbers of releases, not the actual release sizes.



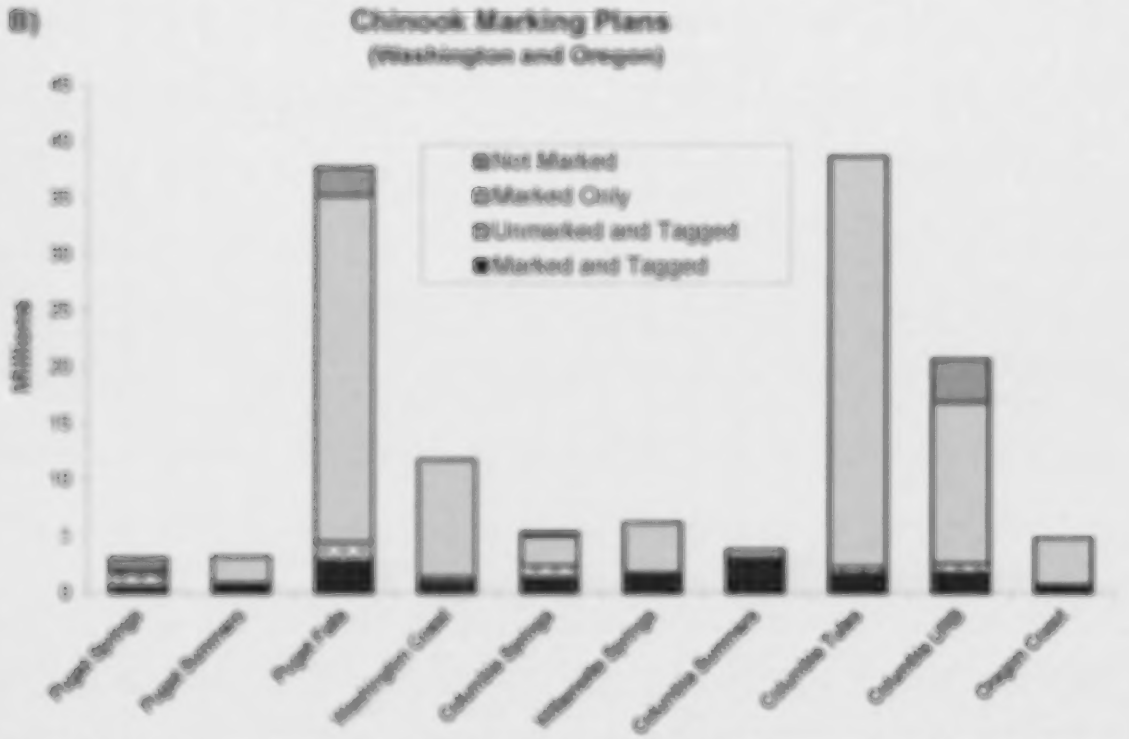


Figure 2.2. Projected Coho (panel A) and Chinook (panel B) salmon releases for brood year 2010 by region and mark status.

2.4 Sampling Methods

2.4.1 Current Agency Sampling Methods

Two methods are currently used to detect fish containing CWTs. The traditional visual sampling methodology relies upon the adipose fin clip as a visual indicator for a CWT. When visual sampling is used, only CWTs from marked fish will be detected. Electronic tag detection (ETD) uses electronic gear (hand-held wand or fixed-position tube) to detect CWTs in marked and unmarked fish. It should be noted that when marked fish are first visually separated in the sample and electronic gear is then used to detect tags in the marked fish, this is considered visual sampling because tags are only recovered from marked and tagged fish.

ETD has not been implemented for all fisheries encountering mass-marked fish. CWT sampling methods for Coho and Chinook are summarized in Table 2.2 and Table 2.3, respectively. In general, ETD has become the standard CWT sampling method in WA, ID, and OR (except for Columbia River and OR coast fall Chinook fisheries, where fish are sampled visually). Visual CWT sampling remains the standard method in AK and CA. In BC the situation is more complex, where sampling methods depend on species, location, and the type of fishery. The lack of recovery of the unmarked component of DIT release groups creates data gaps in the analysis of CWT data and results in uncertainty in the estimated impacts on unmarked (wild) fish. These gaps also require indirect estimation procedures to complete them thus making analyses more time consuming and the results more uncertain.

Alaska has no plans to convert to ETD sampling although the large numbers of marked fish without tags in their sampling programs have begun to cause concerns, e.g., the cost of shipping the additional heads to dissection laboratories has increased. There has been an increase from approximately 7% to 30% of marked and untagged Chinook caught in the troll fishery since the implementation of mass marking. The increased costs to deal with the additional marked fish are not quantified, but will impact the program.

Canada relies on voluntary recoveries of marked Coho and Chinook in recreational fisheries (regardless of whether mark-selective or non-selective regulations are used), while the current restricted commercial fisheries are electronically or visually sampled depending on species and location. As in AK, the program has seen an increase in the submission of heads without tags as well as a decrease in the submission rate of heads as fewer anglers turn in heads. Since 2008, only Coho landed by 'ice' or 'day boats' in the northern BC troll fishery are not subject to electronic sampling and recovery of unmarked DIT CWTs. In that fishery, Coho are sampled visually and CWTs from marked fish only are recovered. South of Cape Caution located just northward of the northern tip of Vancouver Island on the mainland coastline, electronic sampling is being used for both species in commercial fisheries.

California does not employ ETD. However, approximately 300 mass-marked Coho and 1,700 mass-marked Chinook are projected to be encountered in CA (Table 2.4), which could impact CA's sampling program.

Table 2.2. Proposed fishery sampling methods for tagged Coho Salmon in 2011.

Region	Fishery	Type of Sampling	Comments
Alaska	Commercial Sport	Visual Visual	
Northern BC	Commercial Sport	Visual Voluntary (Visual)	Some terminal areas are not sampled. Anglers are encouraged to turn in heads from marked Coho only; therefore, tag recoveries of unmarked Coho are not expected.
West Coast Vancouver Island	Commercial Sport	Electronic Voluntary (Visual)	Incidental recoveries in fisheries on other species; non-retention of unmarked Coho Anglers are encouraged to turn in heads from marked Coho only; therefore tag recoveries of unmarked Coho are not expected.
Strait of Georgia	Commercial Sport	Electronic Voluntary (Visual)	Incidental recoveries in fisheries on other species; non-retention of unmarked Coho Anglers are encouraged to turn in heads from marked Coho only; therefore tag recoveries of unmarked Coho are not expected.
Puget Sound	Commercial Sport	Electronic Electronic	
Washington Coast	Commercial Sport	Electronic Electronic	
Oregon Coast	Commercial Sport	Visual Visual	All sport fisheries are MSF; therefore, recoveries of unmarked Coho are not expected.
Columbia River	Commercial Sport	Electronic Electronic	
California	Commercial Sport	Visual Visual	

Table 2.3. Proposed fishery sampling methods for tagged Chinook Salmon in 2011.

Region	Fishery	Type of Sampling	Comments
Alaska	Commercial Sport	Visual Visual	
Northern BC	Commercial Sport	Electronic Voluntary (Visual)	All Chinook are now electronically sampled and all tags are decoded (this has been the case since 2007). Anglers encouraged are to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
West Coast Vancouver Island	Commercial Sport	Electronic Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
Strait of Georgia	Commercial Sport	Electronic Voluntary (Visual)	Anglers are encouraged to turn in heads from marked Chinook only; therefore tag recoveries of unmarked Chinook are not expected.
Puget Sound	Commercial Sport	Electronic Electronic	
Washington Coast	Commercial Sport	Electronic Electronic	
Oregon Coast	Commercial Sport	Electronic Electronic	
Columbia River	Commercial Sport	Electronic/Visual Electronic	Spring and Summer Chinook fisheries are electronically sampled. Fall Chinook are visually sampled. CWTs from unmarked Chinook from other regions will not be recovered.
California	Commercial Sport	Visual Visual	

Table 2.4. Projected numbers of mass-marked Coho and Chinook in CWT sampling programs 2011 (actual number of fish encountered in samples will depend on survival rates, exploitation rates and sampling rates). For this analysis, CWT recoveries from the following brood years were used: 2003-2005 for Coho and 2000-2003 for Chinook. Tribal hatchery mass-marked production in WA is included with WDFW numbers.

Species	Area/Run		Agency	DIT Group	2011 MM	Projected Encounters in Future Fisheries													
						Alaska		NBC		SBC		WA (CST/PS)		Columbia R.		OR Coast		California	
						Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Spt
Coho	Southern BC		CDFO	2	6,030,000	1,217	107	522	955	1,157	3,154	2,822	3,243	0	0	0	241	0	0
	Puget Sound		WDFW	6	11,146,000	29	0	55	0	14	1,238	33,538	9,961	0	0	42	558	0	0
			USFWS	1	320,000	0	0	0	0	0	39	1,723	309	0	0	0	5	0	0
	WA Coast		USFWS	2	660,000	6	0	19	2	4	39	2,311	619	0	2	26	195	0	0
			WDFW	4	4,350,000	73	0	66	14	29	237	3412	3083	7	44	172	878	0	0
	OR. Coast		ODFW	0	435,000	0	0	0	0	0	18	16	64	17	17	31	83	0	23
	Columbia R		USFWS	1	300,000	0	0	0	0	0	4	8	190	74	74	21	177	0	0
			WDFW	2	8,467,264	0	0	0	0	21	195	1,400	13,128	9,130	2,242	464	7,165	0	59
			ODFW	1	4,942,000	0	0	0	0	0	185	288	1,725	8,723	1,208	449	1,684	0	185
Total					**36,650,264**	**1,432**		**1,633**		**6,334**		**77,840**		**21,538**		**12,191**		**267**	
Chinook	Puget Sound	Spring	WDFW	2	350,000	encounters included with WDFW falls													
		Summer	WDFW	1	2,360,000	encounters included with WDFW falls													
		Fall	WDFW	5	30,700,000	245	1	239	46	5,846	1,678	26,482	4,958	0	0	351	0	0	0
	WA Coast	Spring	WDFW	0	320,000	17	0	40	2	7	7	37	5	0	0	7	0	0	0
		Fall	USFWS	0	1,940,000	118	18	215	13	5	21	37	16	0	0	0	0	0	0
			WDFW	2	8,100,000	1,482	169	2,041	217	38	36	804	214	0	0	0	0	0	0
	OR Coast	N. Spr.	ODFW	0	463,000	103	17	62	35	91	18	79	18	0	0	119	68	0	0
		S. Spr.	ODFW	0	2,042,000	87	0	129	0	196	0	182	98	84	0	1,678	153	934	147
		Fall	ODFW	0	1,627,600	911	101	978	122	231	45	170	75	8	30	503	775	433	155
	Columbia	Spring	ODFW	0	4,454,000	188	10	44	10	157	6	52	6	1,834	512	21	4	0	0
			WDFW	1	2,622,539	382	115	245	182	380	245	218	120	738	780	106	0	0	0
		Summer	WDFW	0	700,000	18	3	13	5	14	3	10	6	22	7	12	4	0	0
		Fall Tules	USFWS	1	11,330,000	0	0	0	0	3,481	370	1,720	790	8,682	450	880	260	10	10
			WDFW	1	17,117,500	691	31	827	73	838	189	356	377	555	367	199	73	0	0
			ODFW	0	7,900,000	206	0	138	20	776	206	501	481	5,168	501	1,749	206	19	20
		URBs	ODFW	0	4,300,000	encounters included with ODFW fall Tules													
			USFWS	1	1,600,000	211	14	91	8	11	0	5	8	217	33	0	0	0	0
			WDFW	1	8,400,000	1,231	135	1,518	125	148	75	87	118	2,025	416	31	13	0	0
Total					**106,326,639**	**6,504**		**7,438**		**15,118**		**38,030**		**22,429**		**7,212**		**1,728**	

Some controversy remains regarding the reliability of wands for detecting CWTs in Chinook. CDFO has adopted a policy of not using wands in either fishery or escapement sampling except in exceptional circumstances: 1) a tube detector fails or breaks down, or 2) a Chinook is too large to pass through the tube detector. A blind study carried out by CDFO over two years in the Fraser River Albion Chinook test fishery with trained staff using hand-held wands found that CWTs were missed when actually present and detected when not present at a rate significantly greater than expected by chance (Parken and Riddell 2007). Most importantly, missed detections and false detections occurred at higher rates in unmarked fish compared to marked fish. The results of the Canadian study contradict all other previous blind studies testing the efficacy of wands in detecting CWTs in Chinook, where detection rates ranged from 91 - 99% (Olson 2007).

The manufacturer of the wands (Northwest Marine Technology, Inc.) now has the ability to test and increase the detection range of wands to a new minimum standard (3.2 cm). Wands that meet this new standard are marked with a silver battery cap. Most agencies use a technique called "mouth wanding" on larger Chinook, that involves wanding the fish both externally (on the snout) and inside the mouth (on the palate). It is hoped that mouth wanding may no longer be needed on Chinook using these "improved" wands. Northwest Indian Fish Commission (NWIFC) conducted a field test of these newer wands on returning Chinook at three hatcheries in the fall of 2010. The study found high detection rates (99 % for all samples combined), but some of the missed tags were detected with subsequent mouth wanding. The manufacturer has also announced a new type of wand, the "T wand" that is even more sensitive with a detection range of 5.5 cm. These wands are now in production and will eliminate the need for mouth wanding.

2.4.2 Estimated Sampling Encounters

A summary of projected mass-marked Coho that may occur in agency CWT sampling programs is provided in Table 2.4. Planned MM will likely result in estimated encounters of approximately 1,400 untagged and marked recoveries in AK and approximately 300 encounters of untagged and marked Coho Salmon in CA – the two geographical areas where Coho are not mass marked or electronically sampled. It is also projected that approximately 2,000 untagged and mass-marked Coho recoveries will occur in Canadian fisheries that rely on visual sampling methods.

A summary of projected mass-marked Chinook that may occur in agency CWT sampling programs is provided in Table 2.4. Planned MM of southern US Chinook stocks will result in estimated mass-marked encounters of approximately 6,500 Chinook in AK, 22,600 Chinook in Canada, and 1,700 Chinook in CA, assuming recent exploitation rates and sampling programs. We emphasize these regions because agencies in these areas rely partially or completely on visual sampling to recover CWTs (Table 2.3). For example, in Alaskan troll fisheries where visual sampling is employed, the percent of marked Chinook Salmon encountered that are untagged has been much greater in the past eight catch years (Figure 2.3).

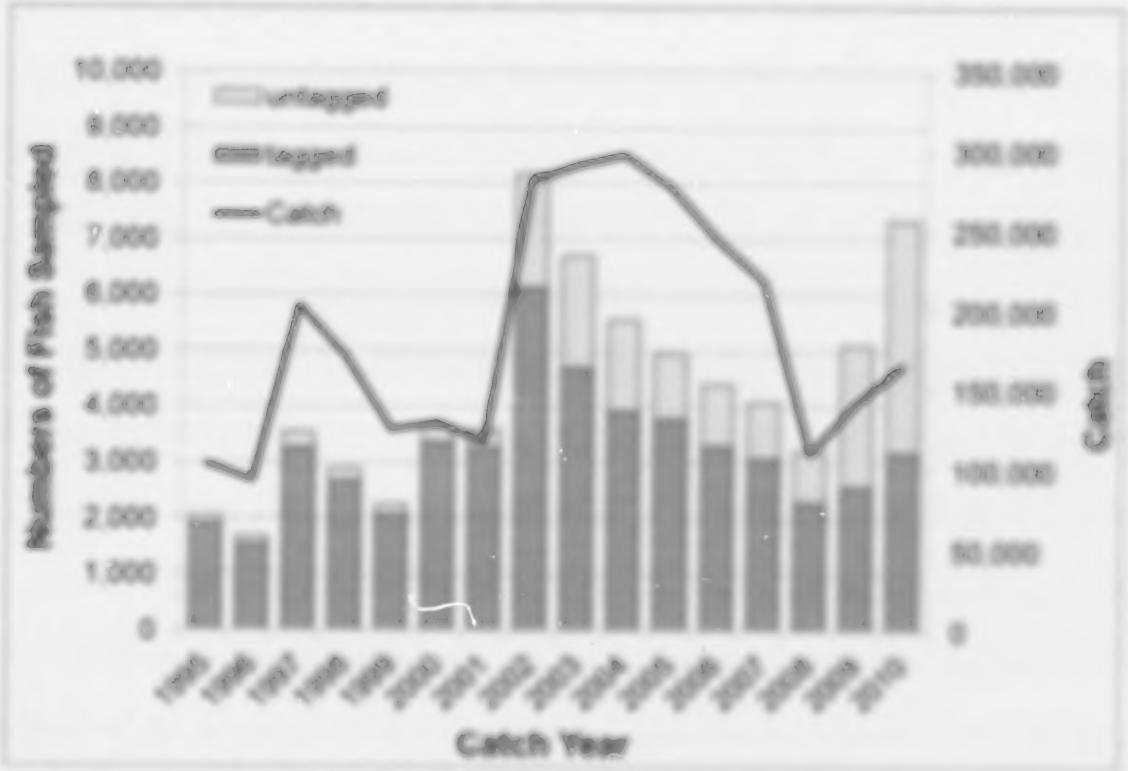


Figure 2.3 Numbers of sampled Chinook Salmon in Alaska's troll fishery by untagged and tagged, with catch numbers, 1995 – 2010

3 Review of Mark-Selective Fishery Proposals Received

In 2008, the SFEC simplified the format of the template for MSF proposals to focus on the description of the fishery and the sampling plan and to identify the smolt-to-adult survival study to be imposed by the fishery (Appendix C and Appendix D). The information to be provided in the proposal template is required to estimate mortalities of unmarked fish from fisheries.

3.1 2011 Mark-Selective Fishery Proposals

MSF's have been prosecuted for Coho since 1998 and for Chinook since 2003 (Table 3.1). For 2011, the SFEC received 42 MSF proposals for Coho and Chinook Salmon in CDFO, WDFW, and ODFW fisheries, these are summarized in Table 3.2 and Table 3.3. Agencies provided the majority of the requested information in each of the proposals and the proposals were submitted in time for the annual review meeting by the SFEC. A few proposals were not submitted in time for due date of November 1 in the year prior to the fishery (see Appendix A for annual proposal and post-season report deadlines).

- There was complete submission of MSF proposals for the second time and it appears that the process for obtaining proposals established by the PSC is now working as intended.
- The number of MSF's appears to be reaching a plateau, with only four new proposals for MSF's, these being in the freshwater zone of Washington's coast.
- Mixed bag regulations were again proposed for several of the MSF's (e.g. OR recreational marine and freshwater fisheries and Canadian marine recreational fisheries).

3.1.1 Coho Salmon MSF's

Sixteen proposals were received for Coho Salmon MSF's proposed to occur in 2011 (Table 3.1, Table 3.2). The SFEC received four proposals from CDFO for ongoing Coho MSF's in Canadian waters, including two in the lower Fraser River and two in southern BC, each proposal contained a variety of fishery openings distinguished by regulation variations. From Washington (WDFW), the SFEC received 10 proposals for ongoing Coho MSF's, of which two of these were new for the 2011 season (Grays Harbor commercial drift gill net and Quillayute River sport). Of the 10 WDFW proposals, four were for MSF's in freshwater and six for MSF's in marine waters. Seven of the Coho MSF's in WA have occurred since 2003, one since 2009, and two since 2010. SFEC has determined that proposals for all ongoing Coho MSF's in WA have been provided. Further, SFEC received a joint proposal from Oregon and Washington (ODFW and WDFW) for an ongoing sport MSF (since 2003) in the lower Columbia River. Additionally, one Coho MSF proposal was received from ODFW, for an ongoing sport fishery (since 2003) off the Oregon coast.

3.1.2 Chinook Salmon MSF's

Twenty-six proposals were received for Chinook Salmon MSF's proposed to occur in 2011 (Table 3.1, Table 3.3). These included two proposals from Canada (CDFO), 18 from Washington (WDFW), four submitted jointly by Oregon and Washington (ODFW and WDFW), and two from Oregon (ODFW). Of the Canadian MSF proposals, one was for an ongoing MSF in the Strait of Juan de Fuca (SJDF), where a fishery has occurred each year since 2008. A sport MSF off the west coast of Vancouver Island, which CDFO proposed in 2009 and 2010, was not proposed again in 2011. Of the 18 WDFW proposals, the number of proposals per WA location

Table 1-1 Status of draft variants to Subpart 1999D components, Title/Acts implementations, and post-Subpart reporting for years 1997 through 2011. "P" indicates the 1999D proposed rule submitted to the FRD. 20XX. "E" indicates the 1999D rule established. "R" indicates the post-season report mentioned in the 1999D rule

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]										
[illegible]										
[illegible]										

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]									
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 3.2 Summary information for Coho Salmon proposals received in 2009 for 2010–2012 MSF's or past MSF's not proposed this year.

Location (Proposal ID#)	Fishery Type and Period	Regulation	Sampling	Stocks Suspected	Comments and Concerns	Methods of Estimation
SE Management Areas 10-28, outer areas of 629-629 (#09F-#10E-#02)	Sport Coastal waters June 1 to December 31 Fraser River Mid-October to December 31	Daily bag limit of 2 (up to 4) marked Coho greater than 30 cm fork length. Barbless hooks. More regulations depend on maximum LOS for marine Fraser River Coho. May have mixed bags.	CWTs obtained through voluntary sport head recovery program	Lots tagged Coho recoveries in 2000-2008. DFT stocks indicated	Voluntary recovery program will not provide recoveries of unmarked and tagged. (how would be low as unmarked fish would only be retained in error (non-compliance) except for fisheries with mixed bag limits.	Total catch using creel surveys and log books from lodges Expansions are completed for areas/times not sampled. CWT estimates depend on awareness factors
SE Management Areas 25-29 629-629 (#09F-#10E-#0)	Commercial September to October	Retention of marked Coho allowed in a Chinook targeted fishery.	Sampled electronically for CWTs	Tagged stocks and DFT groups listed		Total catch is from logbooks.
Fraser River (#09F-#10E-#0)	First Nations October to November	Gillnet and beach seines. Chum and pink targeted fishery. Live wild Coho must be released	No sampling	Lots of tagged stocks. Inch Creek (DFT)	No sampling for CWTs. Numbers of marked and unmarked are reported in some fisheries. Visual sampling only.	Catch estimate method unknown. CWT estimates cannot be made
Fraser River (#09F-#10E-#0)	Sport Table shows periods by specific area	Daily limit varies by time and area. Two per day or 4 per day, only two marked <55 cm	Voluntary and creel	Cultivation, Salmon (Thompson), Chum (Lower Fraser), Inch Cr. (DFT), Salmon R., other South Coast and US stocks	Creel surveys and awareness factors for some times and areas, but no CWT sampling. Need an analysis to evaluate how many marked DFT fish taken.	Creel survey is a roving survey, with incomplete trip angler interviews. CWT estimates require an awareness factor

Table 3.2. Continued.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Washington Ocean Areas 1-4 (MSF-WDFW-06)	Sport July to September	Two per day. Release unmarked Coho. Minimum size limit 16".	See WDFW 2009 Ocean Sampling Program Operating Plan.	All PSC CWT indicator stocks, primarily Columbia R.		Effort-CPUE from angler interviews, stratified by charter/private and weekday/ weekend. Mark rates from charter ride-alongs.
Washington Puget Sound Areas 5,6, 7 and 13 (MSF-WDFW-07)	Sport July to September	Release unmarked Coho, no minimum size limit.	Dockside sampling for CWTs, with ETD. Visual for mark rates.	All CWT indicator stocks from Puget Sound and southern BC.		Catch estimates from catch cards available November of following year. Creel surveys for Areas 5 (7/1-9/30), 9 and 10 (7/16-8/31), and 11 (6/1-9/30). Murthy-estimate.
Washington Ocean Areas 1-4 (MSF-WDFW-15)	Commercial July to September	Release unmarked Coho, minimum size 16".	Dockside sampling for CWTs.	All CWT indicator stocks from Washington and southern BC.	Need information comparing mark rates between troll and recreational fishery.	Catch estimates from fish tickets. Mark rates from sport fishery used for troll fishery.
Nooksack (MSF-WDFW-18)	Sport September 1 to December 31	2 marked adults	No creel or CWT catch sampling. There is escapement sampling.	Nooksack is no longer a DIT. Skookum Creek has a marked and tagged group.	There is no longer a tool to evaluate MSF impacts.	Catch is estimated using catch cards. Intend to apply hatchery tag rates to Nooksack sport harvest to estimate CWTs.

Table 3.2. Continued.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Quillayute River New proposal for fishery started in 2003 (MSF-WDFW-31)	Sport February 1 to December 31	Minimum size limit of 12". Bag limit of 6 salmon. Feb 1-Aug 31: up to 2 adult marked. Sep 1 – Dec 31: up to 2 adult unmarked and 2 adult marked.	CWT sampling of escapement, but not fishery.	Sol Duc Hatchery (DIT)	Mixed bag will cause problem in estimating CWT composition of mortalities.	Catch is estimated using catch cards. Mark rate from commercial fishery. CWTs estimated using tag ratios from tribal net fishery.
Willapa Bay MA 2.1 (MSF-WDFW-29)	Sport Aug 1 to January 31	Daily limit of 6. Up to 3 adults may be retained. Release Chum and unmarked Chinook. Minimum size limit of 12". From June 18-July 31, regulations concurrent with the ocean fishery (Area 2).	Dockside sampling for CWTs and VTRs.	Willapa (Forks Creek), Nemah, Naselle	Mixed bag will cause problem in estimating CWT composition of mortalities.	Catch estimates from catch cards. Mark rates from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery.
Willapa Bay Tributaries (MSF-WDFW-22)	Sport August 1 to January 31	Daily limit of 6, of which 3 adults may be retained. Release unmarked Chinook, unmarked Coho, and Chum. Minimum size limit of 12".	Sept: Dockside sampling for CWTs.	Willapa (Forks Cr), Nemah, Naselle	Willapa (Forks Cr), Nemah, Naselle	Catch estimates from catch cards. Mark rates from estimates of escapement. CWT estimates depend on tag ratios and escapement estimate.
Grays Harbor Area 2.2 (MSF-WDFW-23)	Sport September 16 to November 30	Daily limit 2. Release Chum and unmarked Chinook. Minimum size limit of 12".	Dockside sampling for CWTs.	Skookumchuck Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros, and Humptulips hatcheries.	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated from catch cards. Estimate mark rate from VTRs and commercial fishery. CWT estimates depend on tag ratios from commercial fishery.

Table 3.2. Continued.

Location (Proposal ID)	Fishery Type and Period	Regulation	Sampling	Stocks Impacted	Comments and Concerns	Methods of Estimation
Grays Harbor Tributaries (MSF-WDFW-24)	Sport October 1 to January 31	Daily limit of 6. Up to 2 adults may be retained; of which only 1 may be unmarked Coho. Release Chinook and Chum. Minimum size limit of 12".	No sampling for CWTs.	Skookumchuck, Bingham Creek (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros. and Humptulips hatcheries.	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated using catch cards. Mark rates from estimates of total escapement. CWT estimates depend on tag ratios and total escapement estimates.
Grays Harbor Area 2A and 2D New proposal for fishery started in 2009 (MSF-WDFW-30)	Commercial October	Release unmarked Chinook.	Mark rates from onboard observers. ETD in dockside sampling.	Skookumchuck, Bingham Cr. (DIT), Satsop Springs (DIT), Lake Aberdeen, Mayr Bros. and Humptulips hatcheries.		Total catch from fish tickets. Mark rate from onboard observers.
Lower Columbia River (MSF-ODFW/ WDFW-04)	Sport August 1 through December 31	Marked only. August 131: Bag limit of 1. September 1-30: Bag limit of 2. October 1December 31: Bag limit of 6, up to 2 adults. Minimum size limit of 16" for August –September, 12" for October December.	Creel survey with CWT sampling.	Big Creek, Grays, Elochoman, Cowlitz, Kalama, Toutle, Lewis, Washougal, Sandy, and Klickitat Rivers, Eagle Creek, and Bonneville Hatchery	Mixed bag will cause problem in estimating CWT composition of mortalities.	Total catch is estimated using creel survey. Effort is estimated with aerial surveys, CPUE is estimated from angler interviews.
Oregon coast from Leadbetter Pt to California (MSF-ODFW-03)	Sport June 20 to December 31	Mixed bag; 1-3 salmon/steelhead (depending on area) per day (Chinook>24 in., Coho >16 in., steelhead > 20 in.). Only marked Coho, with no seasonal limit. Up to 2 adult Chinook depending on date and area. Regulations do not apply to Chinook jacks (15-24").	Creel survey. Visual tag detection.	Stocks from BC, Puget Sound, Washington, Columbia R, and Oregon coast are all taken.	No VTR, test fishery or onboard observers for mark rates.	Effort estimated using boat counts and CPUE estimates from angler interviews.

Table 3.3. Summary information for Chinook proposals submitted in 2010 for 2011-2012 MSF's or past MSF's not proposed this year.

Location	Fishery Type and Period	Regulations	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
JDF Strait of Juan de Fuca and WCVI, Areas 19-1 to 6, 18-4 and 20-5 (MSF-FOC-07)	Sport (barbless hooks) June 1 to 18	Daily limit of 2 which can consist of any 2 between 45-67 cm or as many as 2 marked > 67 cm	Voluntary CWT recovery program. Creel survey and lodge log books for catch data.	Table of tagged groups impacted is included in proposal.	Mixed bag (slot limit type) regulations will cause a problem in estimating CWT composition of unmarked mortalities.	Total catch and mark rates by size category estimated from creel surveys and lodge log books. Effort from aerial surveys and CPUE from angler interviews used to get Effort/CPUE.
JDF WCVI (MSF-FOC-08) Proposed in 2009 and 2010, never took place. Not proposed in 2011	Sport (barbless hooks) August 1 to October 15 Areas 23 and 24 July 15 - October 15 Areas 25-27	Daily limit of 2/day between 45 -77cm. One marked fish >77 cm may be retained.	Voluntary CWT recovery program.	Table of tagged groups impacted is included in proposal.	Mixed bag (slot limit) regulations will cause a problem in estimating CWT composition of unmarked mortalities.	Catch and mark rates by size category from creel surveys and lodge log books. Effort from aerial surveys and CPUE derived from angler interviews.
Washington Puget Sound Areas 6-12 (MSF-WDFW-16)	Sport October April	Bag limit of 2 marked salmon. Minimum size limit 22" may be reduced.	Sampling same as in 2010	Puget Sound, Southern BC, and Columbia R stocks.	This fishery will impact CTC indicator stocks that are not clipped or DIT.	Catch estimated from creel surveys and catch cards. Encounters by size and mark status from VTR or test fisheries.

Table 1.1 Continued

Location	Fishery Type and Period	Regulations	Sampling	Salmonid Stocks Impacted	Comments and Concerns	Methods of Estimation
Washington Areas 7 and 6 (WDF WDFW) (1)	Sport July - August	Bag limit of 2 marked salmon. Minimum size limit of 12" may be reduced	Sampling same as in 1979	Puget Sound Southern BC and U stumbly R stocks	This fishery will impact U N stocks and chinook (but are not plugged in MIT)	U catch estimated from creel survey and catch cards. Escapement by cove and creek index from U Wk in this fisheries.
Puget Sound Areas 6 (1) (WDF WDFW) (1)	Sport May - September	Bag limit of 2 salmon per day; minimum size limit 12" may be reduced	Sampling same as in 1979	Puget Sound Southern BC and U stumbly R stocks	This fishery will impact U N stocks and chinook (but are not plugged in MIT)	U catch estimated from creel survey and catch cards. Escapement by cove and creek index from U Wk in this fisheries.
Nooksack River (WDF WDFW) (1)	Sport September 1 to December 31	Bag limit of 2 marked adults. Minimum size limit of 12"	No sampling	Nooksak tagged fall U brood; see tables in this Fishery		Estimate number of Nooksak fall U brood using % catchery on spawning grounds and tag ret. in hatchery.
Skokomish River (WDF WDFW) (1)	Sport June 1 to July 31	Bag limit of 2 salmon per day, marked U brood only. Minimum size limit of 12" Night closure and anti-snagging rule	If coil survey depending on funding, including U M S sampling with ETH	Skokomish (1981)		U catch from creel survey. Effort (W D using effort from mobile and boat counts and U M S from angler interviews. Escapement from coil survey and U trapped nearby and from counts by effort.

Table 1.1 Continued

Condition	Patient Type and Onset	Diagnosis	Sampling	Additional Study Approach	Treatment and Outcome	Methods of Prevention
[illegible] [illegible] [illegible]

Table 3.5. Continued.

Location	Fishery Type and Period	Regulations	Sampling	Indicator Stocks Inspected	Comments and Concerns	Methods of Estimation
Nisqually River (MSF-WDFW-14)	Sport July 1 to January 31	Bag limit of 6 salmon, up to 3 adult (>24") Chinook. Marked only	Creel survey with ETD for CWTs	Clear Creek Hatchery fall Chinook (DIT)		Catch estimates from creel surveys and CWTs. Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews
Skokomish River (MSF-WDFW-20)	Sport August 1-September 30	Bag limit of 2 salmon. Marked only, but retain first 2 legal catch. Minimum size limit of 12"	Creel survey with ETD for CWTs	George Adams (DIT)		Catch estimates from creel surveys. Effort/CPUE using effort from trailer and boat counts and CPUE from angler interviews
Ocean Areas 1 -6 (MSF-WDFW-19)	Sport May through June	Bag limit of 2 salmon per day. Marked only. Minimum size limit of 24".	Creel survey and charter boat observers (mainly Areas 1 and 2). VTRs	All indicator stocks listed in App. H table of proposal are expected to be encountered		Creel survey is an effort/CPUE survey with boat exit counts and exit interviews. Stratified by private and charter boats and weekend/weekdays.
Quillayute River (incl. Bogachiel, Calawah, Dickey, and Sol Duc Rivers) (MSF-WDFW-32) New proposal for MSF begin in 2003.	Sport February 1 to December 31	Bag limit of 6, up to 2 adults. Release unmarked adult Chinook. Minimum size limit of 12"	No sampling	Sol Duc Hatchery Salmon River Hatchery Queets (DIT)	Lack of direct sampling. Tribal CWT data needs to be brought up to date.	Catch from catch cards and CWTs. Tag ratios and mark rates from tribal net fishery

Table 3.3. Continued.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Hoh River (MSF-WDFW-33) New proposal for MSF begun in 2008.	Sport May 1 to August 31	Bag limit of 6, up to 2 adults. Release unmarked adult Chinook. Minimum size limit of 12".	No sampling	Sol Duc Hatchery Salmon River Hatchery, Queets (DIT).	Lack of direct sampling.	Catch from catch cards and CWTs. Tag ratios and mark rates from tribal net fishery.
Willapa Bay Areas 2G, 2H, 2K, 2J, 2M (MSF-WDFW-25)	Commercial August November	Gill net, with recovery boxes.	Dockside sampling and onboard observers	Forks Creek (DIT)		Catch from fish tickets. Standard CWT estimates.
Willapa Bay Area 2.1 (MSF-WDFW-26)	Sport July January	Bag limit of 6, up to 3 adults. Release unmarked adults. Minimum size limit of 12". July regulations concurrent with ocean fishery.	No sampling for CWTs. VTRs.	Forks Creek (DIT)	Lack of sampling	Catch from catch cards. Mark rate and tag ratios from commercial fishery.
Willapa Bay Tributaries (MSF-WDFW-27)	Sport July January	Bag limit of 6, up to 3 adults. Release unmarked adults. Mini num size limit of 12". July regulations concurrent with ocean fishery.	No sampling for CWTs. VTRs.	Forks Creek (DIT)	Lack of sampling.	Catch from catch cards. Mark rates and tag ratios from hatchery and spawning ground data.

Table 3.3. Continued.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River (MSF-ODFW/ WDFW-02) Columbia River from the mouth upstream to McNary Dam	Sport January - June	Marked only. Washington: Bag limit of 6, up to 2 adults. Minimum size limit of 12". Oregon: Bag limit of 2 adults (>24") and 5 jacks (15"-24").	Sport fisheries in the Columbia River are sampled to provide catch estimates, recover CWTs, and collect age specific biological data	CWT stocks: Willamette*, Cowlitz*, Kalama, Lewis, Carson, Little White Salmon, Klickitat, Deschutes, Umatilla, Yakima, Leavenworth, Entiat, Methow, Wenatchee, and Snake River spring Chinook stocks. Indicator stocks have "*".	Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; effort estimate will be underestimated. CWT sampling below McNary is adequate if composition is similar below and above McNary.	Creel survey and catch cards provide estimates of catch. Standard methods used for CWT estimates.
Sport, Columbia River (MSF-ODFW/ WDFW-01) From Mouth to Priest Rapids Dam	June 16 to July 31	Marked only. Washington: Bag limit of 6, up to 2 adults. Minimum size limit of 12". Oregon: Bag limit of 2 adults (>24") and 5 jacks (15"-24").	Creel survey with ETD	Upper Columbia summer Chinook.	The summer Chinook indicator will be impacted but is not DIT. Creel census below McNary does not cover the whole fishery, which extends to Priest Rapids; effort estimate will be underestimated. CWT sampling below McNary is adequate if composition is similar.	Creel survey and catch cards provide estimates of catch. Mark rates observed at Bonneville Dam. Standard methods used for CWTs.

Table 3.3. Continued.

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River (MSF-ODFW/ WDFW-03) Columbia River from mouth upstream to Bonneville Dam (Zones 1 – 5)	Commercial January -June 15	Limited to 8-9" minimum mesh gill net or 4¼" maximum mesh tangle net. Total net length restrictions. Duration of "soak times" of the net also restricted. Use of recovery boxes required during Chinook-directed fisheries.	Commercial harvest sampled at buying stations for CWTs using ETD.	Willamette Springs Other spring Chinook stocks impacted include: Cowlitz, Kalama, Lewis (DIT), Carson, Little White Salmon, Klickitat, Deschutes, Umatilla, Yakima, Leavenworth, Entiat, Methow, Wenatchee, and Snake R. stocks.	Willamette Springs are no longer a DIT group.	Total catch from fish tickets. Observers monitor incidental catch of unmarked Chinook and calculate a marked:unmarked ratio that is applied to landed catch to determine unmarked mortalities.
Yakima River (MSF-WDFW-03) Yakima River from Hwy. 223 bridge at Granger (RM 83) to Roza Dam (RM 127) north of Selah.	Sport. Late April to mid-June, if total run size and proportion of hatchery fish is sufficient for a MSF, while minimizing mortality of unmarked fish.	Marked only. Bag limit of 2/day. Open to bank and boat fishing, 7 days/week (night closure) until reaching a 7.5% exploitation rate based on the in-season total river mouth run size estimate.	Creel survey to estimate total catch, with ETD	Cle Elum Hatchery is 100% marked and tagged		Catch is estimated using creel survey information and standard methods for CWTs.

Table 3.3 Continued

Location	Fishery Type and Period	Regulation	Sampling	Indicator Stocks Impacted	Comments and Concerns	Methods of Estimation
Columbia River (MSF-ODFW/ WDFW-05) Columbia River mouth upstream to McNary Dam	Sport August December	Marked only Buoy 10: Bag limit of 2 adults (□24") Other areas in Washington: Bag limit of 6 salmon, up to 2 adults. Minimum size limit of 12" Other Oregon areas: Bag limit of 2 adults (□24") and 3 jacks (15"-24").	Creel Survey CWTs sampled with ETD	Big Creek (DIT), Elochoman, Cowlitz, Kalama, Toutle, Washougal, Sandy, Klickitat, and Umatilla Rivers, and Spring Creek, Ringold, Priest Rapids, Ochoco, Nez Perce, Lyons Ferry and Bonneville hatcheries. Hanford Reach fall Chinook are also tagged. Lyons Ferry fall fingerlings are an indicator stock, but the DIT group is yearlings.	Need recommended DIT groups in Table 4.2. Mark rates are observed at Bonneville, after the lower river fishery. Should use VTRs. Fishery is mixed bag.	Creel survey and catch cards provide catch estimates and standard methods used for CWTs.
Lower Snake River (MSF-WDFW-28)	Sport April June	Bag limit of 2 marked adults, plus jacks. No night fishing. Barbless hooks.	Creel survey to estimate mark rate. Sampling for CWTs using ETD.	Spring Chinook returning to Idaho and Oregon. No indicator stocks.	No DIT group.	Creel survey for total catch and standard CWT methods.

Table 5.1 (Continued)

Location	Fishery, Type and Period	Regulations	Sampling	Anticipated Results Expected	Comments and Concerns	Methods of Evaluation
Lower Snake River (ARBP-WSRP-01)	Sport September 1 to October 31	Bag limit of 2 marked adults, plus jacks. No night fishing. Barbless hooks.	Creel survey to estimate mark rate. Sampling for CWT's using ETH.	Catch 1,000 / 500 Steelhead based on estimates made for the ISF group's landings	Need ISF group. Need to coordinate sampling to avoid ISF and WSRP.	CWT recovery. Creel survey and catch/effort methods.
Willamette River and tributaries (ARBP-WSRP-02)	Sport January - December	Marked only. Bag limit of 1 adults (> 24") and 1 jacks (<24-28"). Mean avg fishing over 5 years assumed.	Creel survey determination of fishery mark rate. ETH. Jan-Jun above falls.	Willamette Spring Chinook Program has hatchery smolts, ISF status, and number released for last 5 years.	Need ISF group. Willamette ISF was discontinued. No description of how mark rate will be obtained.	CWT estimates from creel survey and catch cards.
Oregon Coast (ARBP-WSRP-03) Ocean terminal areas combine 1 series of river records of the Umpqua, Elk, and Chetco Rivers.	Sport August 1 to December 31	Bag limit of up to 2 salmon or steelhead, plus 1 marked fish (steelhead or Chinook > 20" or Chinook > 24"), plus up to 4 jacks (<24-28" LF; adult limit has not been reached). Seasonal limit of 5-20 unmarked adult Chinook.	Chg fish and biologic data collected by port sampling staff (creel CWT sampling). The Coos Bay Fishery is also sampled at random.	Salmon and STH. River estimates needs are caught in significant numbers in their river fisheries.	Salmon and STH. Coos and ISF groups. There will be no data available to estimate impacts to coho at terminal area fisheries. The several bag regulations would cause problems for estimation.	CWT's estimated from creel survey (CWT). Coos Bay and Siletz River CWT's otherwise.

Table 3.4 Number of tagged and marked Coho Salmon sampled (CWm) and 2006–2008 average percent of total estimated tags (expanded for the sample rate) in fisheries or in escapement. Note that Coho Salmon escapements are not available in the Regional Mark Information System (RMIS) database of the Pacific States Marine Fisheries Commission (PSMFC), so the percents shown for BC are only for fisheries.

Region		Statistic / Release Location	MSF										MSF				Escapement		Total	
			BC		WA Coast		Puget Sound		OR Coast		Columbia R		Commercial		Sport					
			CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	% of Est	CWm	Estimated
BC	[illegible]	[illegible]	2	11%	-	0%	-	0%	-	0%	-	0%	4	23%	-	0%	-	0%	8	102
		[illegible]	7	34%	-	0%	-	0%	-	0%	-	0%	65	63%	5	5%	-	0%	77	245
		[illegible]	2	46%	-	0%	-	0%	-	0%	-	0%	14	54%	1	2%	-	0%	22	127
	[illegible]	[illegible]	3	44%	3	7%	4	8%	1	1%	-	0%	14	17%	4	17%	-	0%	58	280
	[illegible]	[illegible]	1	20%	1	20%	4	34%	2	8%	-	0%	5	11%	-	0%	-	0%	18	42
	[illegible]	[illegible]	1	47%	0	0%	0	0%	-	0%	-	0%	1	23%	-	0%	-	0%	3	10
		[illegible]	2	34%	0	0%	2	17%	-	0%	-	0%	3	30%	4	8%	-	0%	11	53
		[illegible]	-	0%	-	0%	-	0%	-	0%	-	0%	2	100%	-	0%	-	0%	2	9
	[illegible]	[illegible]	8	78%	1	1%	-	0%	1	1%	-	0%	4	20%	-	0%	-	0%	13	108
		[illegible]	1	14%	1	2%	-	0%	-	0%	-	0%	1	8%	-	0%	-	0%	3	90
	[illegible]	[illegible]	4	12%	-	0%	-	0%	-	0%	-	0%	94	64%	5	8%	-	0%	104	317
	[illegible]	[illegible]	-	0%	-	0%	-	0%	-	0%	-	0%	9	100%	-	0%	-	0%	9	25
	[illegible]	[illegible]	-	0%	-	0%	-	0%	-	0%	-	0%	60	100%	-	0%	-	0%	60	203
	[illegible]	[illegible]	23	65%	11	7%	2	5%	1	0%	-	0%	27	25%	-	0%	-	0%	64	402
WA	[illegible]	[illegible]	1	7%	8	7%	2	4%	2	2%	-	0%	20	16%	-	0%	44	59%	87	244
		[illegible]	4	2%	10	7%	6	1%	10	3%	-	0%	108	69%	-	0%	163	38%	302	2,869
		[illegible]	1	1%	14	10%	1	1%	11	3%	-	0%	170	61%	-	0%	133	23%	370	744
		[illegible]	11	7%	38	10%	3	1%	28	4%	1	0%	67	9%	1	0%	1,303	73%	1,779	3,642
	[illegible]	[illegible]	1	0%	11	8%	0	0%	0	0%	-	0%	21	16%	4	4%	138	76%	175	330
		[illegible]	1	0%	1	2%	-	0%	0	0%	-	0%	11	16%	3	12%	54	69%	70	121
		[illegible]	1	0%	1	1%	-	0%	-	0%	-	0%	4	10%	1	2%	64	78%	71	90
		[illegible]	1	0%	11	0%	1	1%	7	0%	-	0%	16	21%	1	1%	364	69%	426	564
	[illegible]	[illegible]	2	7%	20	5%	1	0%	4	2%	1	0%	73	38%	3	2%	332	65%	437	745
		[illegible]	4	2%	8	12%	1	0%	4	3%	1	0%	25	66%	-	0%	84	23%	66	174
		[illegible]	1	3%	24	9%	1	0%	14	6%	1	0%	62	52%	4	0%	389	70%	422	676
		[illegible]	2	0%	28	13%	4	0%	11	4%	1	0%	34	22%	1	2%	223	52%	362	698

Table 3.4 Continued.

Region		Hatchery / Release Location	MSF										NSF				Escapement		Total	
			BC		WA Coast		Puget Sound		OR Coast		Columbia R		Commercial		Sport					
			Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	Estimated
WA	Strait of Juan De Fuca	Dungeness H	-	0%	-	0%	-	0%	-	0%	-	0%	5	65%	-	0%	8	35%	13	24
		Lower Elwha H	1	15%	2	4%	1	3%	0	1%	-	0%	7	22%	-	0%	59	55%	70	107
	Puget Sound North	Hernic Gobin H	5	4%	28	4%	23	8%	5	1%	-	0%	254	77%	18	6%	1	0%	333	1,375
		Glenwood Springs	-	0%	-	0%	-	0%	-	0%	-	0%	1	100%	-	0%	-	0%	1	2
		Kendall Cr H	1	3%	8	4%	5	5%	-	0%	-	0%	119	67%	1	0%	44	22%	178	458
		Lummis Sea Ponds	6	16%	11	4%	2	2%	1	1%	-	0%	157	67%	1	2%	49	9%	228	550
		Skookum Cr H	4	4%	17	4%	7	4%	1	0%	-	0%	235	66%	0	0%	198	22%	463	912
		Wallace R H	7	5%	24	3%	10	3%	4	1%	-	0%	44	10%	7	2%	1,129	77%	1,225	1,540
	Skagit R	Marblemount H	5	4%	24	3%	12	4%	1	0%	-	0%	144	18%	15	5%	879	67%	1,080	1,528
	Puget Sound Mid	Crovekull & Rushwater	1	6%	2	4%	3	12%	-	0%	-	0%	36	68%	3	9%	0	1%	46	139
		Crovekull	4	4%	14	4%	20	10%	1	0%	-	0%	174	67%	31	13%	6	2%	251	979
		Crisp Cr	11	3%	38	2%	35	4%	4	0%	-	0%	412	41%	30	4%	1,689	47%	2,219	4,174
		Elliot Bay NP	7	2%	36	3%	30	4%	4	0%	-	0%	643	83%	37	6%	63	2%	819	2,977
		Nooo Creek H	3	3%	9	2%	7	3%	1	0%	-	0%	150	52%	5	3%	307	37%	483	1,219
		Voights Cr H	5	4%	11	2%	9	4%	0	0%	-	0%	210	48%	12	6%	177	36%	424	1,157
		Green R	2	4%	8	3%	7	5%	2	1%	-	0%	67	37%	5	3%	299	47%	389	642
	Puget Sound South	Clear Creek H	1	16%	2	6%	1	5%	-	0%	-	0%	17	63%	1	2%	5	9%	26	62
		Kalama Cr H	1	2%	5	3%	7	9%	1	0%	-	0%	57	38%	4	4%	155	44%	229	364
		Minter Cr H	1	4%	3	4%	1	4%	-	0%	-	0%	18	27%	2	3%	111	58%	136	195
		South Sound NP	5	3%	17	3%	13	6%	2	0%	-	0%	274	84%	9	3%	3	1%	323	1,167
	Hood Canal	George Adams H	4	3%	17	3%	7	3%	2	0%	-	0%	69	24%	7	4%	716	63%	822	1,189
		Port Gamble Bay	5	7%	14	5%	10	8%	0	0%	-	0%	131	73%	9	7%	7	1%	175	662
		Quilcene Bay	8	5%	25	4%	17	5%	2	0%	-	0%	228	52%	13	5%	292	29%	584	1,528
		Quilcene NFH	5	5%	20	4%	14	5%	1	0%	-	0%	234	53%	8	6%	267	28%	549	1,394
OR	Coastal Oregon, North	Nehalem H	0	1%	7	4%	-	0%	3	2%	2	0%	1	0%	-	0%	331	92%	343	361
		Salmon R H	-	0%	4	5%	-	0%	5	11%	-	0%	1	1%	-	0%	108	82%	117	132
	Coastal Oregon, South	Butte Falls H	-	0%	3	17%	-	0%	4	29%	-	0%	2	26%	-	0%	8	28%	16	27
		Cole Rivers H	-	0%	-	0%	-	0%	1	1%	0	0%	0	0%	1	0%	299	98%	302	304
		Rock Cr H	-	0%	2	12%	-	0%	13	69%	-	0%	1	12%	1	2%	2	5%	19	47
COLR	Central Columbia R	Cascade H	-	0%	12	9%	-	0%	8	8%	6	5%	28	49%	-	0%	82	29%	135	293
		Klickitat H	2	6%	79	36%	1	1%	37	23%	5	2%	74	33%	-	0%	0	0%	198	425
		Oxbow H	-	0%	0	2%	-	0%	0	1%	1	10%	4	71%	-	0%	5	16%	12	34
		Washougal H	-	0%	17	35%	-	0%	8	21%	2	3%	13	30%	-	0%	11	11%	52	105

Table 3.4. Continued.

Region		Hatchery / Release Location	MSF										NSF				Escapement		Total	
			BC		WA Coast		Puget Sound		OR Coast		Columbia R		Commercial		Sport					
			Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	% of Est	Obs	Estimated
COLR (cont.)	Columbia R, general	Washougal Washougal H	-	0%	7	29%	-	0%	2	9%	-	0%	8	42%	0	13%	3	7%	20	40
		Wells H	-	0%	2	1%	-	0%	-	0%	0	0%	67	95%	0	0%	14	4%	84	415
	Lower Columbia R	Big Cr H	0	0%	18	5%	-	0%	15	7%	3	1%	93	33%	0	0%	343	53%	473	667
		Bonneville H	-	0%	41	6%	-	0%	34	7%	10	3%	23	5%	-	0%	1,066	79%	1,174	1,365
		Cascade H	-	0%	10	3%	0	0%	7	3%	6	2%	268	91%	-	0%	9	1%	300	705
		Youngs Bay	-	0%	2	2%	-	0%	1	1%	1	2%	70	92%	-	0%	4	2%	78	194
		Cowlitz Salmon H	2	2%	98	11%	1	0%	48	7%	6	5%	79	9%	1	0%	1,095	66%	1,329	1,759
		Deep R NP - Lower	-	0%	3	1%	0	0%	7	3%	4	2%	208	91%	-	0%	23	4%	246	678
		Deep R NP - Upper	-	0%	9	8%	-	0%	8	9%	1	0%	98	81%	-	0%	5	2%	120	248
		Eagle Cr NFH	0	0%	17	9%	-	0%	14	10%	4	3%	8	6%	-	0%	110	71%	154	385
		Elochoman H	1	3%	27	13%	0	0%	17	11%	2	1%	43	19%	0	0%	217	53%	308	439
		Fallert Cr H	-	0%	23	10%	-	0%	21	12%	6	4%	10	8%	-	0%	299	66%	358	467
		Grays River H	0	0%	16	12%	-	0%	17	16%	5	4%	40	33%	-	0%	105	35%	184	310
		Kalama Falls H	1	4%	32	11%	1	1%	18	8%	1	4%	45	16%	-	0%	302	56%	401	546
		Lewis River H	3	1%	231	11%	4	0%	123	7%	27	6%	185	8%	0	0%	2,920	67%	3,493	4,393
		North Toutle H	-	0%	33	9%	-	0%	29	10%	10	13%	13	5%	-	0%	426	64%	511	847
		Oxbow H	-	0%	9	3%	-	0%	6	3%	5	1%	20	8%	-	0%	562	85%	603	665
		Sandy H	1	1%	47	10%	0	0%	34	10%	15	5%	126	29%	-	0%	386	44%	609	944
		Washougal H	1	2%	39	14%	1	1%	16	8%	3	2%	41	17%	0	0%	285	56%	386	510

Table 3.5. Average number of tagged and marked Chinook Salmon sampled (Obs) and percent of total estimated CWTs (% of Est) in fisheries or in escapement averaged over years 2005-2009. The number of observed escapement recoveries is not available for BC stocks. MSF = mark-selective fisheries; NSF = non-selective fisheries; ESC = escapement.

		MSF										NSF							
		WAPS		WACST		ColR		TERM		Total MSF		COMM		SPORT		ESC		Total	
Jurisdiction	Stock	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est	Obs	Est
Alaska	Alaska	-		-		-		-		-		1,716	40.6%	228.0	6.5%	222.0	65.4%	2,165.6	10,649
British Columbia	Atnarko Summer	-		-		-		-		-		45.2	21.4%	11.8	13.2%		65.7%	75	502
	Big Qualicum	0.6	0.7%	-		-		-		0.6	0.7%	24.2	13.9%	20.0	19.7%		73.2%	84	317
	Chehalis (Harrison Fall Stock)	1.2	0.5%	1.0	0.3%	-		-		2.2	0.8%	54.2	16.3%	18.4	9.6%		72.8%	85	1,006
	Chilliwack (Harrison Fall Stock)	2.6	0.4%	2.2	0.3%	-		-		4.8	0.7%	115.6	12.8%	57.0	13.6%		38.5%	193	2,788
	Cowichan Fall	-		0.2	0.3%	-		-		0.2	0.3%	25.0	26.9%	14.8	34.3%		39.8%	63	268
	Dome Creek Spring	-		-		-		-		-		2.6	52.7%	2.0	16.5%		61.5%	8	71
	Kitsumkalum Summer	-		-		-		-		-		96.2	21.7%	42.8	16.9%		75.3%	154	1,286
	Nanaimo River Fall	-		0.2	0.1%	-		-		0.2	0.1%	11.8	5.9%	20.4	18.7%		76.7%	42	549
	Nicola River Spring	-		0.2	0.2%	-		-		0.2	0.2%	6.2	4.8%	17.0	18.2%		74.8%	35	317
	Puntledge Summer	-		-		-		-		-		9.6	9.3%	9.4	15.9%		61.1%	43	277
	Quinsam Fall	-		-		-		-		-		43.0	21.0%	21.8	17.9%		31.9%	105	613
	Robertson Creek	-		-		-		-		-		257.8	42.4%	104.2	25.7%		53.9%	403	2,142
	Lower Shuswap River Summers	-		0.2	0.1%	-		-		0.2	0.1%	85.2	23.7%	49.0	22.3%		66.0%	156	1,112
Columbia R	Cowlitz Fall Tule	-		0.6	0.9%	-		-		0.6	0.9%	16.6	19.2%	8.8	13.9%	139.0	26.4%	165	228
	Hanford Wild	-		-		-		-		-		60.8	51.8%	12.6	21.8%	12.2	18.4%	86	330
	Columbia Lower Rr Hatchery	0.2	0.5%	1.0	1.1%	-		-		1.2	1.7%	51.8	43.6%	13.8	16.3%	119.6	46.1%	186	325
	Lewis River Wild	-		-		-		-		-		40.2	35.0%	6.6	18.9%	63.2	70.3%	110	291
	Lyons Ferry Yearling	0.2	0.0%	17.6	1.0%	1.2		-		19.0	1.0%	659.0	28.6%	245.8	13.0%	1,553.8	57.4%	2,478	6,513
	Spring Creek Tule	1.8	0.4%	4.6	1.0%	-		-		6.4	1.3%	271.2	51.9%	43.2	9.4%	204.0	37.2%	615	1,652
	Columbia Summers	-		0.6	0.1%	4.6	0.2%	-		5.2	0.3%	505.4	45.3%	111.2	17.3%	639.4	35.1%	1,261	3,318
	Upriver Brights	-		0.8	0.2%	-		-		0.8	0.2%	192.0	45.5%	41.0	19.2%	303.0	59.7%	537	1,209
	Willamette Spring	-		0.6	0.1%	44.6	4.2%	62.2	12.7%	107.4	17.0%	194.2	16.1%	32.6	7.1%	949.6	56.1%	1,284	2,221
OR Coast	Elk River	-		-		0.2		-		0.2		254.0	25.3%	154.6	18.6%	837.8	35.4%	1,247	2,963
	Salmon River	-		-		-		-		-		241.6	29.7%	200.0	35.0%	194.6	62.6%	636	2,345
WA Coast	Hoko Fall Fingerling	-		0.8	0.6%	-		-		0.8	0.6%	44.6	24.3%	11.8	12.4%	98.6		154	507
	Queets Fall Fingerling	-		-		-		-		-		235.2	49.3%	27.4	7.9%	20.2	48.1%	283	1,368
	Sooes Fall Fingerling	-		0.2	0.3%	-		-		0.2	0.3%	41.4	38.6%	8.2	13.0%	75.6	51.9%	125	289

Table 3.5 Continued

Jurisdiction	Stock	Adult								Fish				Fish		Total	
		N. Gill		N. Troll		Gill		Troll		Total Adult		Freshet		Jack			
		Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.	Obs.	Est.
N. Puget Sound	Stamp, Adam Fall Fingerling	13.0	3.7%	6.2	3.7%	-	-	-	-	19.2	3.7%	46.0	21.3%	46.0	14.3%	465.0	42.8%	65.2	1,255
	Cowa River Fall Fingerling	12.0	3.4%	3.0	1.8%	-	-	-	-	15.1	2.9%	210.0	48.3%	31.0	12.3%	475.0	68.3%	72.5	1,110
	Stetson Creek Fall Fingerling	24.2	6.9%	5.2	3.2%	-	-	-	-	29.4	5.6%	147.0	33.9%	42.0	12.7%	980.0	48.3%	1,266	1,766
	Tenmile Fall Fingerling	32.0	9.0%	5.0	3.2%	-	-	-	-	37.0	6.8%	108.0	45.8%	52.0	8.9%	710.0	47.2%	1,000	1,000
	Tenbrook Spring Fingerling	3.0	1.4%	1.0	0.5%	-	-	0.0	0.2%	4.0	2.9%	45.0	27.0%	22.0	22.0%	167.0	25.5%	393	752
	Samish Fall Fingerling	10.0	2.7%	6.2	3.5%	-	-	0.2	0.4%	17.2	6.9%	89.0	50.9%	47.2	14.9%	175.2	54.8%	529	1,164
	Skagit Spring Fingerling	4.0	1.4%	1.4	0.5%	-	-	102.0	14.7%	110.0	16.5%	125.0	14.5%	98.0	14.5%	748.0	87.8%	1,010	1,000
	Skagit Spring Yearling	9.0	6.0%	1.2	0.6%	-	-	90.0	58.3%	76.2	22.9%	86.0	39.0%	28.0	14.5%	353.0	65.0%	607	782
	Skykomish Fall Fingerling	4.0	2.2%	1.0	1.0%	-	-	-	-	5.2	3.3%	35.0	17.1%	34.0	14.0%	486.0	25.1%	665	666
	South Puget Sound Yearling	8.2	14.9%	0.4	0.7%	-	-	-	-	8.6	15.2%	20.0	21.3%	16.0	46.0%	76.0	65.0%	151	237
	Skagit Summer Fingerling	2.0	0.5%	0.0	0.0%	-	-	0.2	0.0%	2.2	0.0%	146.0	28.0%	28.0	5.0%	82.0	64.0%	260	1,140
	Nooksack Fall Fingerling	2.0	2.0%	1.0	0.5%	-	-	-	-	3.0	3.0%	28.0	37.0%	17.0	16.5%	163.0	16.5%	211	766

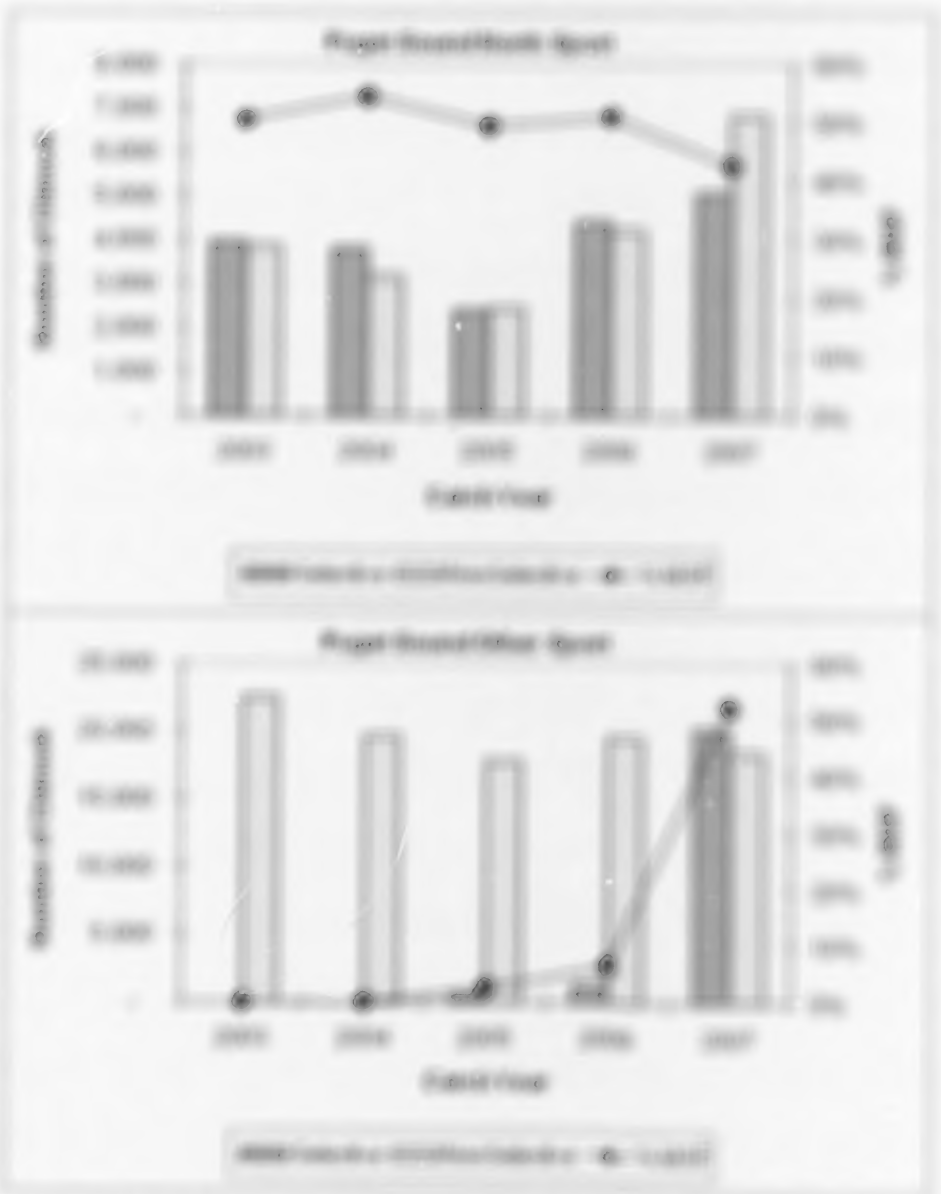


Figure 1.1 Fuel landed catch in NSRI's and WSRI's in Rigolet based by catch years 2003-2007

6 [illegible]

6.1 MSF Proposals

[illegible]

6.2 MSF Reports

[illegible]

Table 4.1 :

4.2 [illegible]

Table 4-1 [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

4.0 [illegible]

[illegible]

The SFEC recommends that agencies review their sampling methods with respect to the current expansion of MSF's into coastal fisheries. It is specifically recommended that ETD be implemented by ODFW, beginning in 2011, for Oregon Coastal Chinook and Columbia River fall Chinook to recover DIT's for Chinook exploitation rate indicator stocks.

4.5 Mixed-Bag Regulations in MSFs

Regulations to implement MSF's for recreational fisheries are becoming increasingly complex. At this time we are concerned about monitoring, sampling, and estimation methods keeping pace with increases in regulation complexity. MSF's are being proposed for much finer time/area strata than are being used for CWT expansions which will result in an inability to separate impacts in MSF's and NSF's.

Different types of mixed bag regulations have been part of the MSF's proposed by Canada, OR and OR. In most cases this is a mixed bag, where only marked adults may be kept but marked and unmarked juveniles may be retained (Table 4.3). In addition, in 2009 BC proposed two variations of the 'standard' mixed bag. For the SJDF fishery, both marked and unmarked Chinook could be retained within slot limits (45 – 67 cm) but marked only at sizes above the upper limit of the slot. For the WCVI fishery, marked fish of any size above 45 cm can be retained but the daily bag limit of two Chinook can include one unmarked fish between 45 and 77 cm. In OR there is a seasonal limit on unmarked Chinook Salmon. These mixed bag regulations present a problem in estimating mortalities of unmarked DIT groups and associated wild stocks. The agencies proposing these mixed regulations should assist in developing the analytical tools to measure the impacts of these fisheries or provide documentation if methods have been developed and employed.

Table 4.3. Mixed bag regulations proposed for Chinook MSF's. Details on regulations are found in Table 3.3.

Regulation Type	Examples	Location
Mixed bag, marked only above maximum size.	2/day. keep all between 45-67 cm, only marked over 67 cm	BC Strait of Juan de Fuca (SJF)
Mixed bag, marked within size range.	2/day either only those fish that are hatchery marked regardless of size or one unmarked >77cm. A combination is allowed.	BC WCVI
Mixed bag, adults only marked and juveniles marked or unmarked	Bag limit of 6, up to 2 adults, which must be marked. Minimum size limit 12".	Puget Sound, Snake River fall Chinook and Oregon coastal
Differing mixed bag, adults and juveniles between state regulations	*Washington* sport daily limit of 6 salmon, of which only 2 may be adults (marked only), minimum size limit of 12". *Oregon* sport daily limit is 2 marked only adult Chinook (>24" total length) and 5 marked jacks (19"-24" total length). The daily limit for adult Chinook is the same between the states, but the daily limit on jack Chinook is different.	Columbia River Chinook recreational fisheries
Seasonal limit on unmarked fish	There is a seasonal limit of 5 unmarked adult Chinook coastwide, see Oregon regulations.	Oregon coastal Chinook

REFERENCES

Olson, R. 2007. Logistics and technology of mass marking and electronic CWT recovery in Pacific Salmon. Presentation at AFS Annual Meeting. Available from: www.rmpc.org/mass-marking-and-selective-fisheries-presentations.html. (May 2008).

Parken, C., and B. Riddell. 2007. Operational issues with mass marking and mark-selective fisheries. Presentation at AFS Annual Meeting. Available from: www.rmpc.org/mass-marking-and-selective-fisheries-presentations.html. (May 2008).

This page intentionally left blank

APPENDICES

Appendix A. Understanding of the Pacific Salmon Commission Concerning Mass Marking and Selective Fisheries (Revised February 2004).

Understanding of the
Pacific Salmon Commission
Concerning
Mass Marking and Mark Selective Fisheries

February 2004 Policy Statement

The Pacific Salmon Treaty's Memorandum of Understanding (MOU) obliges the Parties to, among other things, "maintain a coded-wire-tag and recapture program designed to provide statistically reliable data for stock assessment and fishery evaluation." The Pacific Salmon Commission (PSC) recognizes that the selective fisheries for marked hatchery Coho and Chinook Salmon can impact the coastwide coded-wire-tag (CWT) program. For the sole purpose of fulfilling this MOU obligation, the PSC has established the following policies and procedures. This policy does not preclude the PSC from evaluating the impacts of, and making recommendations concerning, mass marking or selective fishery plans as they affect the negotiation and establishment of Treaty annex provisions.

It shall be the policy of the PSC to review proposals for mass marking and selective fisheries to determine consistency with the Parties' commitment to the MOU provisions regarding the reliability of data needed for management of salmon fisheries within the jurisdiction and management area of the Treaty, including whether they impose substantial cost increases for agencies to conduct required data collecting programs.

The PSC shall establish a Selective Fishery Evaluation Committee (SFEC) to perform the activities set forth in the attached Terms of Reference.

To facilitate the SFEC review, the Parties shall do their utmost to ensure that their domestic managers submit all proposals for mass marking (MM) and mark-selective fisheries (MSF) which could potentially affect stocks or fisheries of concern to the PSC in accordance with the following schedule:

1. Not later than June 1 of each year. Provide early notice containing the agency's plans to consider conducting MSFs over the next 3-5 years.

2. Not later than June 1 of the year prior to implementation. Provide new or substantially changed MM or MSF project proposals.

3. Not later than November 1 of the year prior to implementation. Provide proposals for MM or MSF programs that are anticipated to continue annually without substantive change.

4. Upon completion of domestic fishery planning processes, agencies conducting MSFs are to provide final selective fishery plans.

5. Upon completion of MM programs, agencies are to report the number of fish that were actually mass marked and the extent to which releases are (single and double index) tagged for assessment.

6. Agencies shall report results of MSFs conducted during a season in the annual post-season report provided, using a format specified by the SFEC.

7. Not later than November 30 of the year following conduct of MSFs. Agencies are to report fishery and stock-age-specific estimates of mortalities for unmarked fish impacted by MSFs to the PSC technical committees

- The PSC shall consider, by the annual February PSC meeting, the SFEC reviews of proposals for MM and MSFs and discuss potential actions to address concerns related to any MM or MSF proposals that the SFEC determines will significantly and adversely affect the CWT program.

- The Parties will do their utmost to ensure that MM and MSF proposals are developed in consultation with domestic co-management agencies or processes, and that proposing agencies or entities provide information required by the SFEC and adhere to reporting requirements to enable the PSC technical committees to complete their assignments in a timely manner.

After the occurrence of a selective fishery and when the data are available, the PSC shall review the management agency report on the actual conduct of the fishery with respect to its impact on the CWT program, and recommend changes and improvements.

Terms of Reference for the Selective Fishery Evaluation Committee

I. Reporting and Committee Structure: The Selective Fishery Evaluation Committee (SFEC) will report to the PSC and will be comprised of a Steering Committee and two working groups: the Regional Coordination Working Group (RCWG) and the Analytical Working Group (SFAWG). All official members of the Steering Committee and working groups will be considered members of the SFEC.

A. Steering Committee: The Steering Committee will be comprised of:
   1. the co-chairs of the PSC Coho Technical Committee, Chinook Technical Committee, and Data Sharing Technical Committee;
   2. the co-chairs of the two working groups;
   3. agency mass-marking/selective-fishery coordinators; and
   4. additional agency representatives approved by the responsible Party.

B. Regional Coordination Working Group (RCWG): The RCWG may be comprised

of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All RCWG members should contribute actively to the work of this group.

C. Selective Fishery Analysis Working Group (SFAWG): The SFAWG may be comprised of members of the Steering Committee and other PSC technical committees and of the agency representatives approved by the responsible Party. All SFAWG members should contribute actively to the work of this group.

II. Duties of the SFEC

A. Serve as a coastwide clearinghouse to facilitate the appropriate level of coordination and reporting on MM and MSF programs among the Parties, affected agencies, and existing coastwide and regional committees established to monitor activities related to the coastwide CWT program;

B. Provide advice to the PSC regarding potential adverse impacts of MM and MSFs on the CWT program;

C. Assess and monitor the cumulative impacts of MSFs on stocks of concern to the PSC;

D. Provide MM or MSF project proponents with information regarding concerns for potential impacts of their projects on the CWT program.

E. Receive and review MM and MSF proposals from the proponent(s) as early in the planning process as possible to identify potential issues and concerns regarding impacts on the CWT program.

F. Establish a technical evaluation process that will:

1. Review proposed mass-marking/selective-fisheries initiatives developed by the proponent(s) and identify potential impacts on other jurisdictions and the CWT program;

2. Review, in consultation with relevant PSC technical committees, procedures and protocols for marking, sampling, and evaluation developed by the proponent(s) and, if appropriate, develop and recommend alternative procedures to address potential concerns or measures that could be taken to mitigate for adverse impacts on the CWT program;

3. Establish standard formats and reporting requirements for agencies conducting MSFs to use when providing post-season information. Review post-season agency evaluations of the performance of MSFs and their estimates of mortalities on stocks of concern to the PSC;

4. Identify information needs or request modifications of proposals to meet concerns regarding impacts on the CWT program; and

5. Conduct, at agreed intervals, technical evaluations of mass marking and selective fishery programs in order to assist the Parties to maintain the integrity of the CWT program.

G. Work with PSC Technical Committees to establish formal standards and objectives for a viable CWT program to enable more precise evaluation of potential impacts of MM and MSFs on the viability of the coastwide CWT program and to guide the development of mitigation measures.

H. Specific duties of the Steering Committee include being responsible for overall coordination and prioritization of the activities for the working groups and being the focal point for reporting to the PSC. The agency mass-marking/selective-fishery coordinators should ensure that mass marking and selective fishery proposals are provided to the SFEC in a timely manner.

III. Specific duties of the RCWG, among other related activities, include:

A. Coordinate and report on continuing research on electronic detection and mass marking technologies;

B. Collate and share information on CWT sampling procedures and programs; suggest modifications to sampling and monitoring programs to proponents;

C. Review MM proposals to determine potential impacts on sampling and tagging programs;

D. Provide agencies with a list of MM and MSF proposals received by the SFEC;

E. Provide the necessary liaison with the Data Standards Working Group of the Data Sharing Technical Committee to ensure that necessary modifications are made to PSC data exchange formats to maintain the integrity of the CWT system; and

F. Prepare an annual report summarizing mass marking statistics, index tag groups, and sampling programs for marks and CWTs.

IV. Specific duties of the SFAWG, among other related activities, include:

A. Design marking and sampling strategies that will achieve desired precision for CWT-based estimates;

B. Develop analytical tools for the evaluation, by the SFEC and MSF proponents, of MM programs and MSFs and their potential impacts on the coastwide CWT program;

C. Provide the necessary technical liaison with agencies and other coastwide committees working on selective fishery evaluation models;

D. Review and recommend parameter values for assessing impacts of MSFs;

E. Develop analytical tools for estimating the impacts of MSFs on escapements and exploitation rates for naturally spawning Coho and Chinook stocks based on post-season information;

F. Review MSF proposals and provide advice to the proponents regarding the design of MSFs and the conduct of sampling and monitoring programs; and

G. Recommend guidelines, procedures, and/or time frames necessary to evaluate the success of MSFs in conserving naturally spawning stocks.

L. Cassidy
Chair

J. Davis
Chair

This page intentionally left blank

Appendix B. Mass Marking Proposal Template

Mass Marking Proposal ID #	
Date Received	

TEMPLATE FOR ADDENDUM FOR MASS MARKING PROPOSALS

This template is intended for proposals to mass mark any release group of more than 100,000 fish from a hatchery complex or area that involves the following:

1) Chinook or Coho salmon,
2) mass marked with an adipose clip, but untagged, and
3) expected to be intercepted in Pacific Salmon Commission fisheries.

PROPOSAL TITLE:

Contact information

Proposing Agency	
Contact Person	
Mailing Address	
Phone Number	
Fax	
Email	

Is the proposal

new _____
substantially changed _____
or a continuation of a previous proposal _____

Proposed Marking and Tagging

1. Purpose of mass marking
   a. Provide a brief description of the goals and objectives of the proposal (e.g. to obtain more information on hatchery straying to wild spawning grounds, to increase fishing opportunities, or to identify hatchery/wild composition in fisheries).

   b. If the proposal is not a new proposal, list the Mass Marking Proposal ID number(s) (assigned by the PSC Executive Secretary) corresponding to the previous proposal. In addition, describe any significant differences from previous proposals (i.e., additions or deletions of mass marked stocks or ORF groups).

   c. Identify potential mark selective fisheries targeting the proposed mass marked stocks that your agency might pursue in the future.

2. List all proposed mass marking and ORF plans (see example format below), including the

[redacted]

Region	Subject	Estimated number of marked fish that will be recovered in fishery sampling programs	Maximum sampling intervals in days (CD)
Alaska	Commercial		
	Bank		
Northern BC	Commercial		
	Bank		
Southern BC	Commercial		
	Bank		
Washington (Coast & Pu	Commercial		
	Bank		
Columbia River	Commercial		
	Bank		
Oregon Coast	Commercial		
	Bank		
California	Commercial		
	Bank		

Describe the recoveries and methods used to make the estimates. Calculate how the goal was achieved. Provide other information, if relevant, as the Administrator may direct in applying results of the stock assessment for marking and/or tagging.

[illegible]

individual tag codes if available), whether those stocks were Double Index Tagged (DIT). Appendices F and G provide tables of tagged indicator stocks for Coho and Chinook for your convenience. Please note we are interested in tagged impacts alone, untagged hatchery production should not be included.

In-season management

7. Describe your sampling program for sampling for CWTs, marks and estimation of total catch. Attach your sampling plan if available. At a minimum, include descriptions for the following:
   a. CWT recoveries.
      i. Will there be *random* sampling of CWTs (i.e., fishers exiting fisheries contacted for biological sampling of harvest) or will you be using voluntary programs?
      ii. If *random* will there be ETD or visual identification of tagged fish?
      iii. If ETD in *random* samples, will all tagged fish (marked and unmarked) be processed?
      iv. If *random* what is the expected sample rate for CWTs?
      v. If voluntary programs are used, how is the awareness factor estimated?
   b. Monitoring for retained catch by sample strata for sample expansions. The sample strata and the strata of catch estimation must match the location/time/regulation strata (i.e., whenever there is a change in regulation such as from MSF to non-selective, or change in bag limits, the sampling strata should also change).
   c. Monitoring of mark rate in the MSF (this is the total mark rate, percent marked in the harvest from the fishery).
   d. Other information, e.g., retained unmarked fish (mixed bag fisheries, or mark recognition error in MSF).

Other information.

8. Please include any other information that will be useful for estimation of unmarked tagged mortalities in your MSF. For instance, sources of estimates of unmarked to marked ratios for DIT tagged groups (e.g., in a test fishery, nearby hatchery, non-selective fishery). Please provide any input you wish on approach to estimate the unmarked tagged mortalities for DIT groups, or for appropriate release mortality rates to be used.

Appendix D. Spreadsheet Template for MSF Proposals.

Agency and Contact Information:														
Fishery Information				Other regulations			CWT stocks		Sampling program				Other sources of info for estimation of unmarked mortalities and mark ratios
Region and Fishery Area	Period (Yr/ Mon)	Fishery type (ID, FSC, Com, Rec) and Gear	Species (Target and Mark-selective)	Bag limits (adult and juvenile by mark status	Lower Size Limit	Other regulations comments (e.g., upper limits, gear restrictions, mesh size)	Hatchery and Stock Name	Indicator or DIT	CWT sampling method (e.g., random /direct or voluntary)	Tag Detection Method	Are All Tags Processed?	Other sampling (mark rate, release mortality rate, compliance)	

This page intentionally left blank

Appendix E. Status of Mass Marking Proposals Received in 2010 for Mass Marking to Occur in 2011.

Description of Proposal and Agency	New or Continuation Proposal	SFEC Proposal Number
Coho Salmon		
Southern BC Coho – CDFO	Continuation	MM-FOC-01-2011
Puget Sound Coho – WDFW/Tribal	Continuation	MM-WDFW-01-2011
Washington Coast Coho – WDFW/Tribal	Continuation	MM-WDFW-04-2011
Washington Columbia River Coho – WDFW	Continuation	MM-WDFW-05-2011
Makah, Quilcene, Quinault NFH Coho – USFWS	Continuation	MM-USFWS-018-2011
Eagle Creek NFH Coho – USFWS	Continuation	MM-USFWS-04-2011
Columbia River Coho – ODFW	Continuation	MM-ODFW-04-2011
Oregon Coast Coho – ODFW	Continuation	MM-ODFW-05-2011
Chinook Salmon		
L. White Salmon R. and Spring Cr. NFH Fall Chinook – USFWS	Continuation	MM-USFWS-17-2011
Makah NFH Fall Chinook – USFWS	Continuation	MM-USFWS-19-2011
Willamette Spring Chinook – ODFW	Continuation	MM-ODFW-01-2011
Oregon North Coast Spring Chinook – ODFW	Continuation	MM-ODFW-02-2011
Oregon South Coast Spring Chinook – ODFW	Continuation	MM-ODFW-03-2011
Oregon Columbia River Fall Chinook – ODFW	Continuation	MM-ODFW-06-2011
Oregon Coast Fall Chinook – ODFW	New	MM-ODFW-07-2011
Puget Sound Chinook – WDFW/Tribal	Continuation	MM-WDFW-02-2011
Columbia R. Chinook – WDFW/CRITFC	Continuation	MM-WDFW-03-2011
Washington Coastal Chinook – WDFW/Tribal	Continuation	MM-WDFW-06-2011

This page intentionally left blank

Appendix F. MSF Proposals Received in 2010 for Fisheries Occurring in 2011. Table lists all MSF proposal numbers assigned by SFEC and current status of each proposal (√ = Submitted; X = Discontinued).

Unique ID	Fishery and Location	HM Target Species	2011 status	First yr. proposal	First yr. fishery
Fisheries and Oceans Canada					
MSF-FOC-01	*Subdivided into other proposals*				
MSF-FOC-02	Sport, Southern BC	Coho	√	2003	2003
MSF-FOC-03	FSC, Lower Fraser freshwater	Coho	√	2006	2006
MSF-FOC-04	*code no longer used*				
MSF-FOC-05	Commercial, Southern BC	Coho	√	2004	2005
MSF-FOC-06	Sport, Lower Fraser freshwater	Coho	√	2006	2003
MSF-FOC-07	Sport, Strait of Juan de Fuca, BC, selected subareas	Chinook	√	2009	2008
MSF-FOC-08	Sport, WCVI, selected subareas, mainly inside	Chinook	X	2009	none
Oregon Department of Fish and Wildlife					
MSF-ODFW-01	Sport, Willamette R (on spring run)	Chinook	√	2003	2003
MSF-ODFW-02	Sport, Oregon coast	Chinook	√	2009	2008
MSF-ODFW-03	Sport, Oregon coast	Coho	√	2010	2003
Oregon and Washington Departments of Fish and Wildlife					
MSF-ODFW/WDFW-01	Sport, Lower Columbia R (on spring run)	Chinook	√	2003	2003
MSF-ODFW/WDFW-02	Sport, Columbia R (on summer run)	Chinook	√	2003	2003
MSF-ODFW/WDFW-03	Commercial, Lower Columbia R (on spring run with tangle or large net)	Chinook	√	2003	2003
MSF-ODFW/WDFW-04	Sport, Lower Columbia R (since 1999)	Coho	√	2008	2003
MSF-ODFW/WDFW-05	Sport, Col. R. fall Chinook	Chinook	√	2009	None
Washington Department of Fish and Wildlife					
MSF-WDFW-01	Sport, Skykomish R	Chinook	√	2003	2003
MSF-WDFW-02	Sport summer, WA area 5&6	Chinook	√	2003	2003
MSF-WDFW-03	Sport, Yakima R (on spring run)	Chinook	√	2004	2004
MSF-WDFW-04	*code no longer used*				
MSF-WDFW-05	Sport, Lower Snake R fall Chinook	Chinook	√	2009	2008
MSF-WDFW-06	Sport, WA areas 1-4 and Buoy 10	Coho	√	2003	2003
MSF-WDFW-07	Sport, Puget Sound	Coho	√	2004	2003
MSF-WDFW-08	*old proposal Area 5&6*	Chinook	X		
MSF-WDFW-09	Sport, Carbon & Puyallup R	Chinook	√	2005	2003

Unique ID	Fishery and Location	HSM Target Species	2011 status	First yr. proposed	First yr. fishery
Washington Department of Fish and Wildlife (cont.)					
MSF-WDFW-10	*code no longer used*				
MSF-WDFW-11	Sport summer, WA area 5-13	Chinook	√	2007	2007
MSF-WDFW-12	Sport, Upper Skagit R	Chinook	√	2007	2005
MSF-WDFW-13	Sport, Nooksack R	Chinook	√	2004	2004
MSF-WDFW-14	Sport, Nisqually R, Jul-Jan	Chinook	√	2007	2005
MSF-WDFW-15	Commercial, WA areas 1-4	Coho	√	2008	2003
MSF-WDFW-16	Sport winter, WA area 6-10	Chinook	√	2005	2005
MSF-WDFW-17	*code no longer used*				
MSF-WDFW-18	Sport, Nooksack R	Coho	√	2009	2003
MSF-WDFW-19	Sport, WA Coast Chinook, Areas 1-4	Chinook	√	2009	2010
MSF-WDFW-20	Sport, Skokomish Chinook	Chinook	√	2009	2010
MSF-WDFW-21	Troll, WA Coast Chinook Areas 1-4	Chinook	X	2009	None
MSF-WDFW-22	Sport, Willapa tributaries	Coho	√	2010	2003
MSF-WDFW-23	Sport, Grays Harbor, Area 2.2	Coho	√	2010	2007
MSF-WDFW-24	Sport, Grays Harbor tributaries	Coho	√	2010	2003
MSF-WDFW-25	Commercial, Willapa Bay	Chinook	√	2010	2010
MSF-WDFW-26	Sport, Willapa Bay, Area 2.1	Chinook	√	2010	2010
MSF-WDFW-27	Sport, Willapa Bay tributaries	Chinook	√	2010	2010
MSF-WDFW-28	Sport, Snake River, spring Chinook	Chinook	√	2010	2010
MSF-WDFW-29	Sport, Willapa Bay MA 2.1	Coho	√	2010	2010
MSF-WDFW-30	Commercial, Grays H Area 2C	Coho	√	2011	2009
MSF-WDFW-31	Sport, Quillayute River	Coho	√	2011	2003
MSF-WDFW-32	Sport, Quillayute River, spring/summer Chinook	Chinook	√	2011	2003
MSF-WDFW-33	Sport, Hoh River, spring Chinook	Chinook	√	2011	2008

Appendix G. Current PSC Coho CWT Exploitation Rate Indicator Stocks and DIT Groups

Region	Exploitation Rate Indicator Stocks	Natural Unmarked Stock Representation	DIT[1]
BC North Coast	Lachmach	North Coast Wild	
	Tahsquan	Skeena	
Interior Fraser	Coldwater	Thompson River	
	Salmon	Thompson River	
	Lemieux	Thompson River	
Georgia Basin	Big Qualicum	East Coast Vancouver Island	
	Goldstream River	East Coast Vancouver Island	
	Black Creek	East Coast Vancouver Island/ Wild	
	Inch Creek	Lower Fraser	x
	Salmon River	Lower Fraser Wild	
	Chemainus River	North Vancouver Island	x
West Coast Van Is.	Robertson Creek	West Coast Vancouver Island	
Puget Sound	Skookum Creek	Nooksack	
	Lummi Bay Ponds	Nooksack	
	Skagit (Marblemount)	Skagit	x
	Skykomish (Wallace River)	Stillaguamish/Snohomish	x
	Bernie Gobin	Stillaguamish/Snohomish	
	Green River (Soos)	Mid Puget Sound	x
	Puyallup (Voights)	South Puget Sound	x
	Puyallup Tribal (Hatchery)	South Puget Sound	
	Squaxin Net Pens	South Puget Sound	
	Kalama Creek (Wagnuth)	South Puget Sound	
	Quilcene	North Hood Canal	x
	Quilcene	Quilcene Net Pens (Hood Canal)	
	Quilcene	Port Gamble Net Pens (Hood Canal)	
	George Adams	South Hood Canal	x
	Dungeness	Dungeness	
	Lower Elwha	Strait of Juan de Fuca	x
Washington Coast	Hoko	North Coast	x
	Sekiu (Lilly)	North Coast	x
	Queets Wild	North Central Coast	x
	Quinault	Quinault	x
	Salmon Springs	Grays Harbor	
	Salmon (late)	Grays Harbor	
	Satsop (Bingham)	Grays Harbor	x
	Forks Creek (late)	Willapa Bay	
	Forks Creek	Willapa Bay	x
	Naselle	Willapa Bay	
Columbia Basin	Lewis River (Type N and S)	Lower Columbia River	x
	Eagle Creek	Lower Columbia River	x
	Sandy River	Lower Columbia River	suspected
	Tanner Cr	Lower Columbia River	Caen
Oregon Coast	Rogue River (Cole Rivers)	Oregon South Coast	

[1] Proposed for 2011

[2] DIT stock released from Salmon River Hatchery

Appendix B. Current PSC Chinook CWT Exploitation Rate Indicator Stocks and CWT Groups

Area	Exploitation Rate Indicator Stocks	Typical Fishery and Gear Representation	Run Type	ERT
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	

[illegible]

Appendix 1 Post-Season Report Template

Template with example 1 – as provided below in Appendix 1 Table 1-1, 1-2 and 1-3.

Appendix 1 Table 1-1 Sampling methods and processing of logs in all Districts and Companies. Guidance: Respond to a district or company or a region as considered fit.

Region	Sampling Locations	Cable/Chainsaw Method	Processing Methods	Logs Processed
Tarime	Nyamwaga	Manual	Sawmilling	200
	Kibasuka	Manual	Sawmilling	200
	Kitembe	Manual	Sawmilling	200
	Nyamwaga	Chainsaw	Chainsaw	200
Musoma	Nyamwaga	Manual	Sawmilling	200
	Kibasuka	Manual	Sawmilling	200
	Kitembe	Manual	Sawmilling	200
	Nyamwaga	Chainsaw	Chainsaw	200
Serengeti	Nyamwaga	Manual	Sawmilling	200
	Kibasuka	Manual	Sawmilling	200
	Kitembe	Manual	Sawmilling	200
	Nyamwaga	Chainsaw	Chainsaw	200

Appendix 1 Table 1-2 Information on GMO value chain assessed, locations, periods and numbers and GMO sampling and monitoring logs were undertaken in reports of GMO, each district, each company and individual harvesting, and compliance to steps (Table). Compliance assessed, information of each organization and is marked if the assessed and considered location as to harvesting has assessed and included. Provide information in a simple implementation of GMOs, as provided in a report.

Region	Officers in the	Company	Sampling	Sampling and Monitoring	Compliance to Guidelines	
				GMOs	Observations	Recording	Compliance
Tarime	Tarime						
Musoma	Musoma						
	Musoma						
	Musoma						